

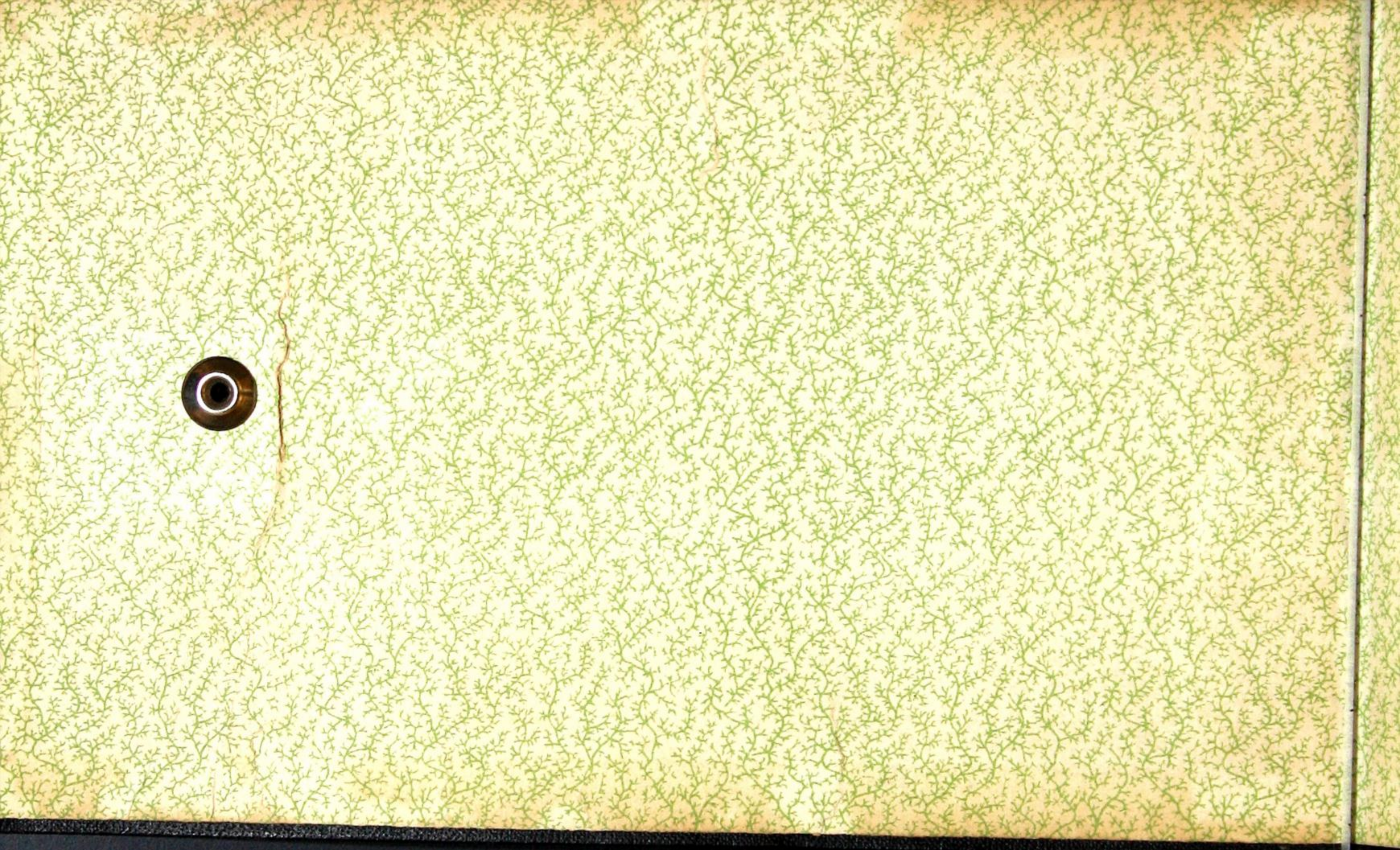
THE DOMINION FITTER



^{The}
Dominion Radiator Company
Limited

TORONTO

St. John Montreal Hamilton Winnipeg Calgary Vancouver



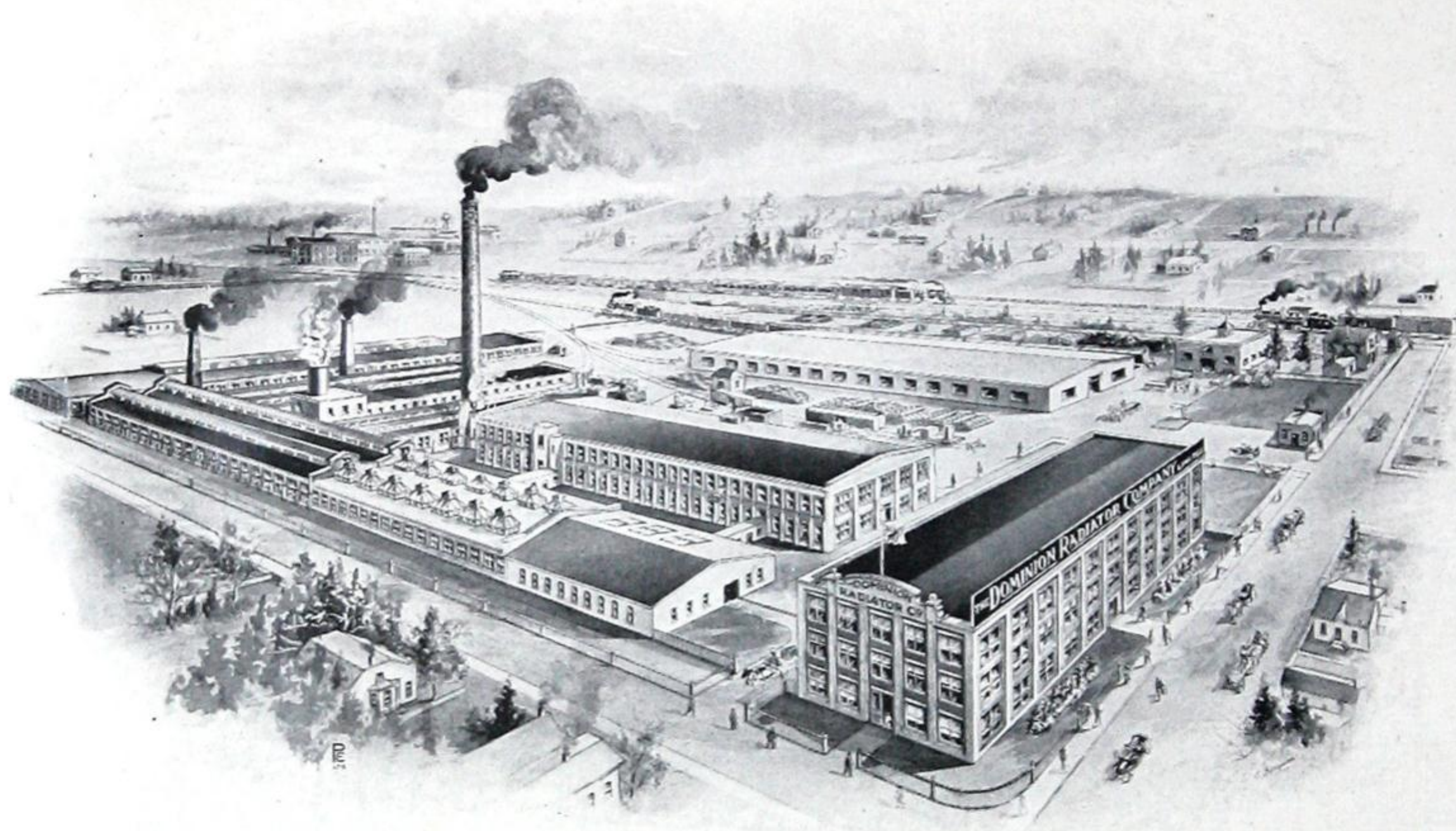
12/21

THE DOMINION FITTER



THE
DOMINION RADIATOR COMPANY
LIMITED

St. John Montreal Hamilton **TORONTO** Winnipeg Calgary Vancouver



Head Office and Works: Corner of Van Horne and Dufferin Streets, Toronto, Ont.

Branches at: St. John, Montreal, Hamilton, Winnipeg, Calgary, Vancouver.

10493-5875 0000

FOREWORD

In presenting our Dominion "FITTER" to the Architects, Heating Engineers and General Trade, we desire to express our appreciation for the liberal patronage which has been bestowed upon us in the past.

Three new series of heating boilers are herein catalogued for the first time, viz:—

Safford MOGUL Round Hot Water Boilers,
Safford MAGAZINE Self-feed Down-draft Boilers,
Safford SQUARE-POT Sectional Boilers.

These new lines are offered only after the most rigid tests have assured us of their worth, and we are confident that they will equally merit your good will and support.

In this Dominion "FITTER" we have endeavored to set out in plain and logical sequence, information as to sizes, capacities and data pertaining to Boilers, Radiators and Specialties required by the Architects, Engineers and Steamfitters for their prompt and accurate making of specifications and calculations.

Our quarter of a century specializing in the manufacture of heating apparatus, combined with our immense new plant equipped with the latest modern machinery enable us to offer values in boilers and radiators, which for uniformity, finish, neatness of design, durability and efficiency are the recognized standard throughout the Dominion.

A feature which will appeal to the Architects, Heating Engineers and Trade in general is the system adopted by us in grouping the respective Radiator designs as manufactured by us under one trade name, which will simplify the writing out of specifications, viz.:—

SAXON.....Applies to Plain round top;
VICTORIA.....Applies to Ornamental square top;
REGINA.....Applies to Plain square top.

When writing specifications all that is required in addition to mentioning the trade name is the number of column of radiator, namely: One, two, three, or four column.

The same idea is expressed in the Wall Radiation:—

ONTARIO.....Applies to the Plain pattern;
PRINCESS.....Applies to the Ornamental pattern;
STANDARD.....Applies to the Plain (new design).

This idea is one that should meet with entire approval.

We respectfully solicit your correspondence in respect to any of the lines we manufacture or handle. Prompt attention will be given to any communications received.

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NOTICE

The lists, ratings and data in this catalogue are revised and corrected to date, superseding all former lists, and are subject to change without notice. All former editions of our catalogue should be destroyed.

Conditions of Sale

Our goods are guaranteed only to the extent of furnishing new parts for any found defective in manufacture.

No claim will be allowed unless presented within 60 days after receipt of goods.

Return of Goods

Goods must not be returned except by special permission, and when so returned will be subject to discount.

Special Notice

All goods are shipped at buyers' risk, therefore, if you give the Transportation Company a clean receipt for damaged goods, or for shipment upon which there are shortages, you do so at your own risk. We are not responsible for goods broken in transit; our responsibility ceases with the Transportation Company's receipt. Broken goods should be refused, or full description of breakage made by Agent, or Transportation Company on expense bill. The paid freight bill, with notation made upon same, is necessary for claim against Transportation Company. We will render any aid possible to assist purchaser in collecting his claim from Transportation Company, but deductions will not be allowed to purchaser on his account with us therefor.

THE

DOMINION RADIATOR COMPANY
LIMITED

RATINGS

GENERAL RATING CONDITIONS

1. The ratings of our water boilers are based on a temperature of 180° in the water at the boiler, and of our steam boilers on a standard of two pounds pressure at the boiler, for a period of eight hours on one charging of fuel, during which time only 80% of it is consumed, leaving a balance of 20% for a rekindling reserve.
2. To maintain a temperature of 70 degrees in all rooms warmed under these conditions, it is assumed that all of the apparatus shall be properly installed and the radiating surface and boiler capacity adequate.
3. Our ratings apply to cast-iron direct radiators operating on a normal installation of piping. When **Direct-Indirect** radiation is used it is good practice to consider each foot of such surface equivalent to $1\frac{1}{2}$ feet of direct radiation, and when **Indirect** radiation is used, as in a gravity system of ventilation, each foot of such surface equivalent to two feet of direct radiation, but when operating in conjunction with a Fan and Motor, as in hot-blast ventilation, each foot of **Indirect** surface is then equivalent to five square feet of direct radiation.
4. In all of our boilers into which a coil or water-back has been placed for heating water for domestic purposes, two feet of direct steam radiation, or three feet of direct water radiation should be figured for each gallon of capacity in the storage tank.

RATINGS—Continued

5. The ratings of all our boilers, excepting the Safford-**Kewanee** Boilers, are based on the use of anthracite coal.
6. The ratings of our Safford-**Kewanee** Boilers are based on the use of "run of the mine" soft coal.
7. Our Safford **Mogul** and Safford Square-Pot Sectional Boilers will give excellent results using soft coal, and where it is intended to use bituminous, or soft coal continuously, it is good practice to add from 10 to 25% to the size of the boiler according to the heating value of the coal to be used.
8. Safford **Magazine Self-Feed Down-Draft** Boilers give best results burning pea coal.
9. In finally determining the capacity of the boiler required for each and every installation, take into consideration the local conditions under which it is to operate.

GUARANTEES

The ratings of all types of Safford Boilers are conservative and absolutely reliable, but owing to the varying conditions surrounding installation, they are guaranteed only to the extent of furnishing new castings for any found defective in manufacture.

BOILER COVERINGS

We strongly advise that all our cast-iron boilers be covered with asbestos cement, or good insulating material, to the thickness of $1\frac{1}{4}$ inches. Steam boilers give best results when an air space is left between the covering and the boiler. The quantity of cement required will be found on pages 255, 256, 257.

BOILER TRIMMINGS

All trimmings furnished with our Steam Boilers are standard, and consist of Safety Valve, Steam Gauge, Try-Cocks, Water Column, Automatic Damper Regulator and Firing Tools, consisting of Poker, Scraper and Flue Brush.

Where Provincial or Municipal Regulations govern types of equipment to be furnished with Steam Boilers, orders or specifications for boilers should so state.

Water Boilers are supplied with Firing Tools only. When required Altitude Gauge and Thermometer will be furnished at an extra charge.

S A F F O R D
M O G U L
ROUND HOT-WATER BOILERS

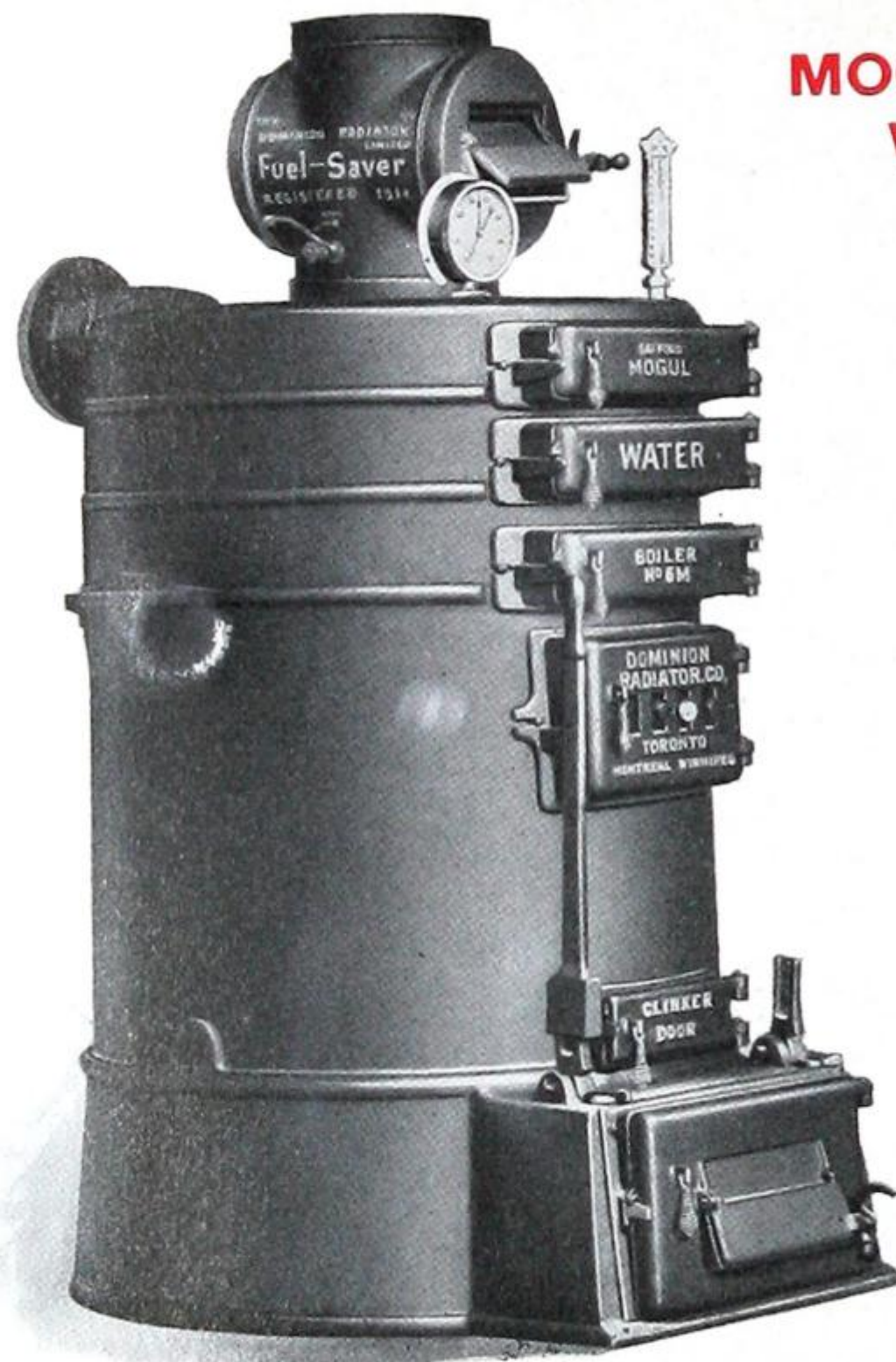
**SAFFORD MOGUL BOILERS ARE MADE IN 16 SIZES
WITH CAPACITIES RANGING FROM 235 TO 2670 SQUARE
FEET OF DIRECT RADIATION IN ADDITION TO MAINS**

Information required for ordering Boilers and Boiler Repairs, see page 116

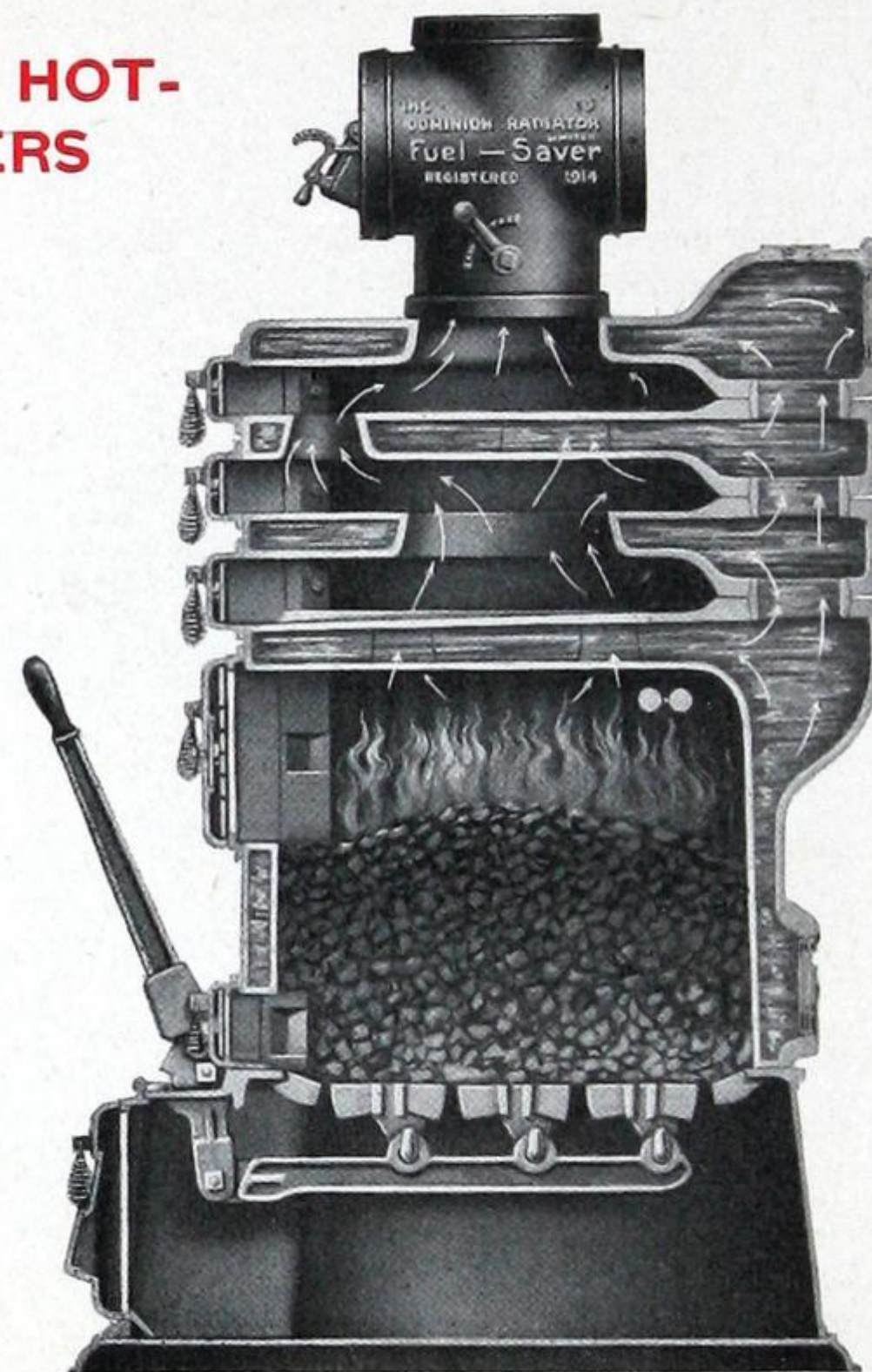
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LIMITED

St. John Montreal Hamilton TORONTO Winnipeg Calgary Vancouver

MOGUL ROUND HOT- WATER BOILERS

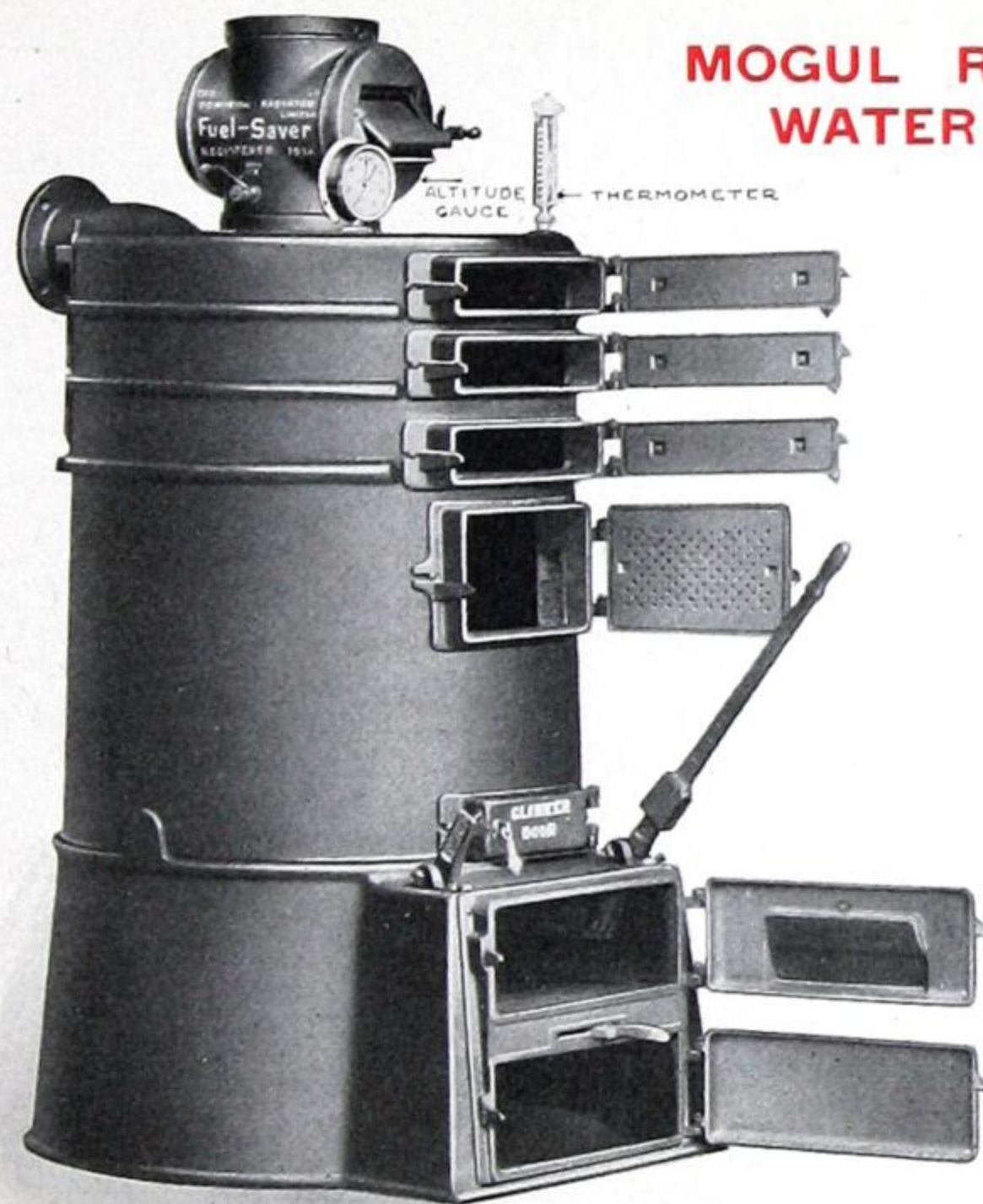


LOW BASE—General View

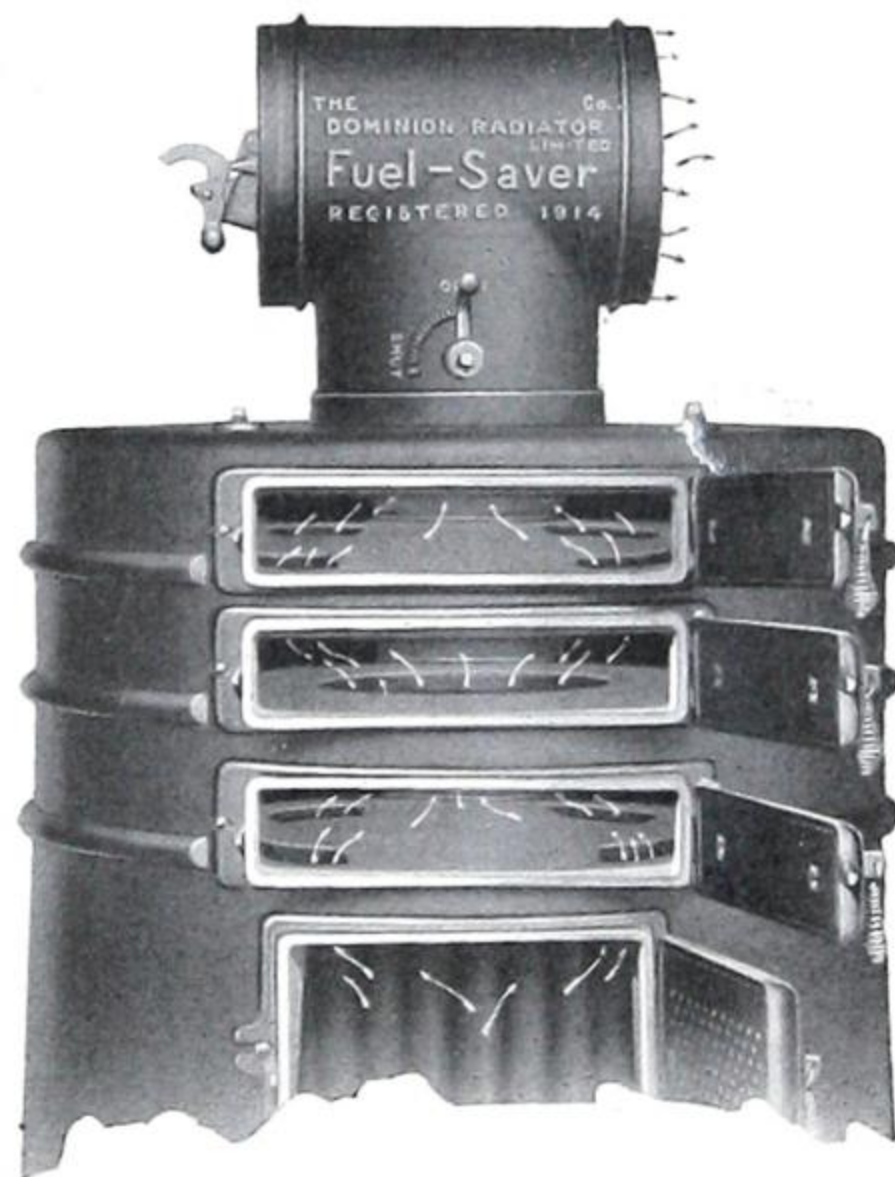


LOW BASE—Sectional View

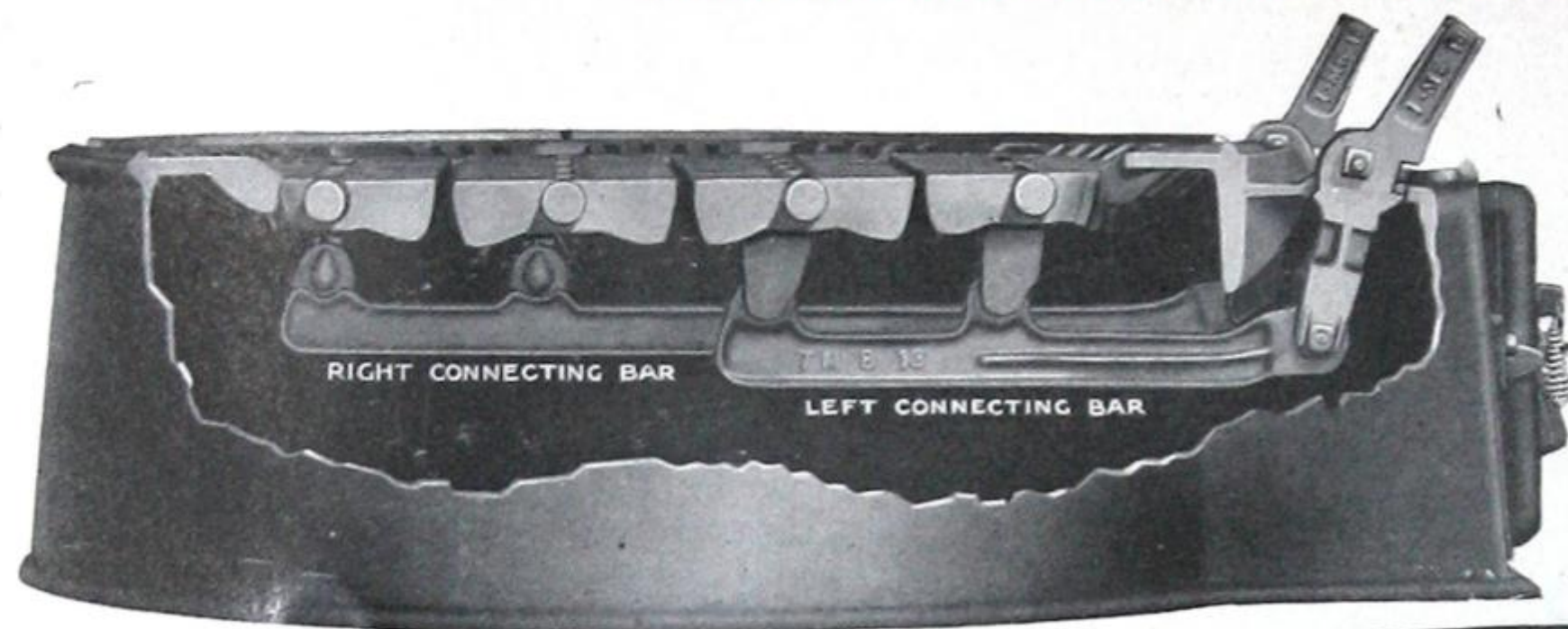
MOGUL ROUND HOT- WATER BOILERS



HIGH BASE—General View



Sectional View, showing Travel of Heated Gases

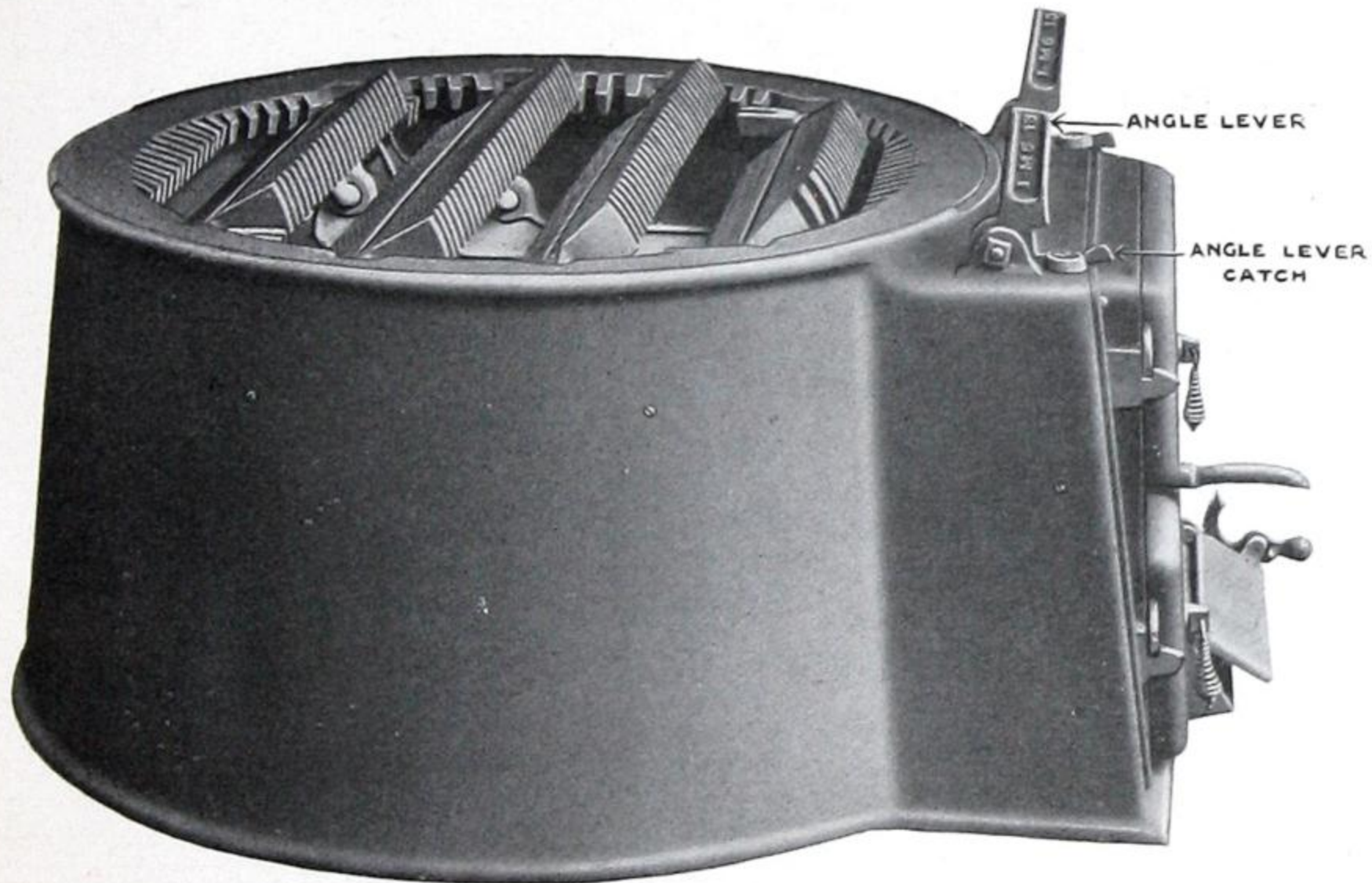
MOGUL ROUND HOT-WATER BOILERS

Sectional View, Showing Cotter-Pinless Grate Bar Mechanism

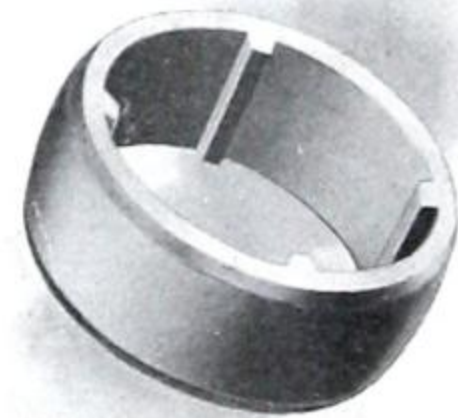


General View of Base of Low Base Boiler

MOGUL ROUND HOT-WATER BOILERS



General View of Base of High Base Boiler, showing how Grate Bars can be dumped right over



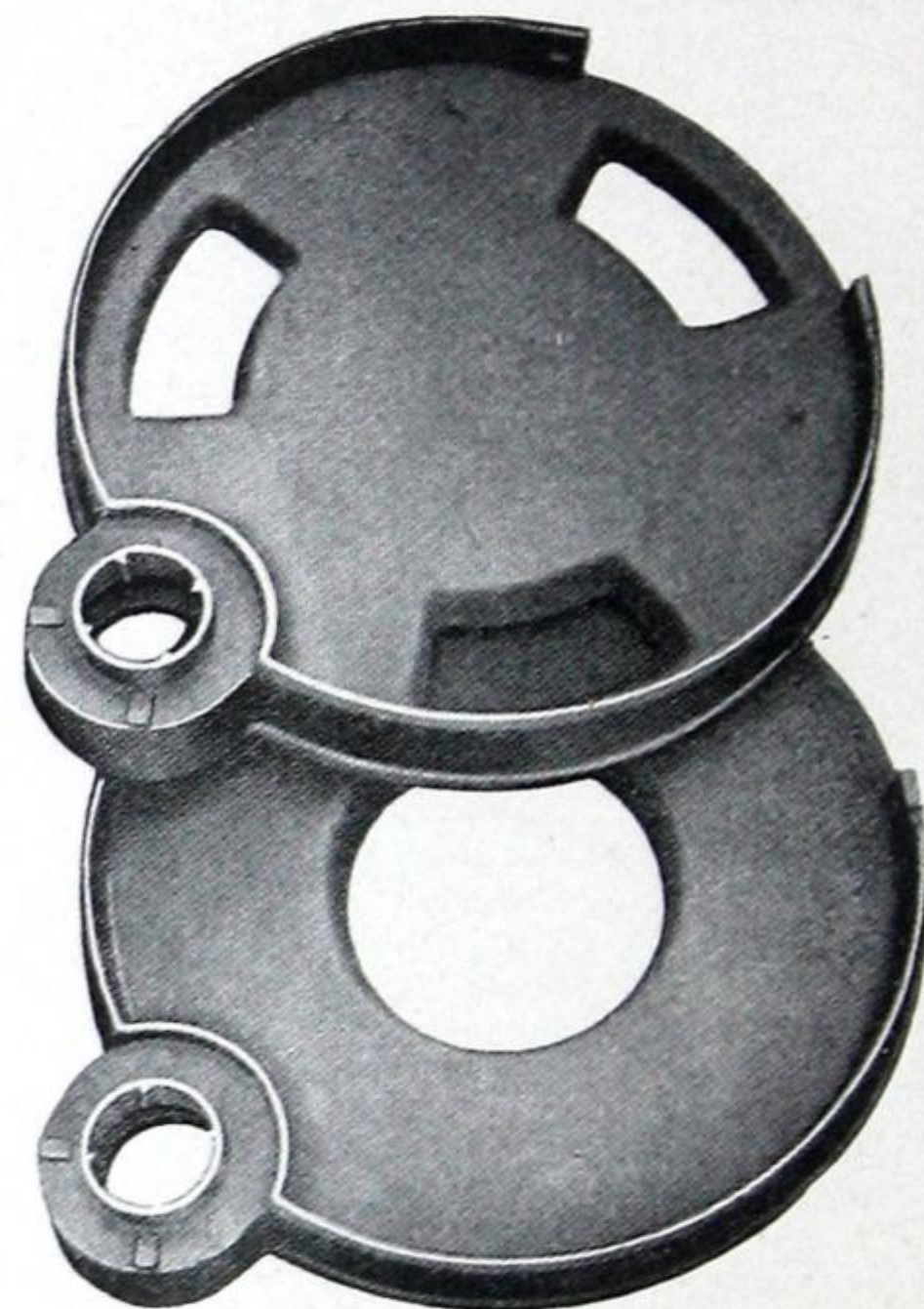
PUSH NIPPLE
Push Nipples are used to Connect Section to Section

MOGUL ROUND HOT-WATER BOILERS



FIREPOT

The above Illustration shows the specially designed One-piece Corrugated Firepot



SECTIONS

The Upper Section illustrates Outer Flue Section
The Lower Section illustrates Inner Flue Section

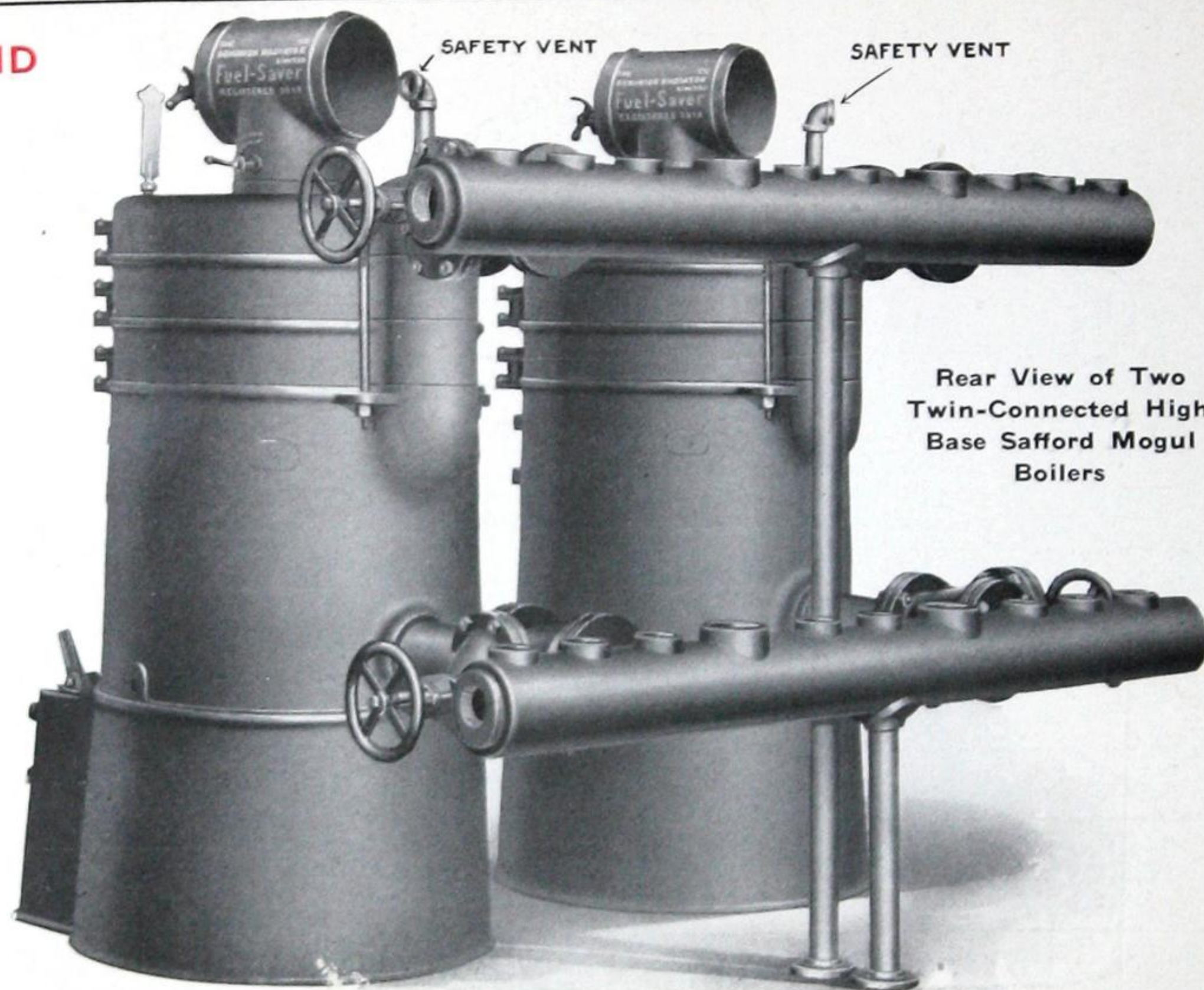
MOGUL ROUND HOT-WATER BOILERS**FUEL SAVER****MOGUL DOMESTIC HEATER**
LIST PRICES AND DATA**RE-CLEANING DOMESTIC HEATER****FUEL SAVERS**

Number.....	1 to 4	5 to 6½	7 to 9
Particulars...	For Boilers Nos. 1, 1½, 2, 2½, 3, 3½, 4	For Boilers Nos. 5, 5½, 6, 6½	For Boilers Nos. 7, 7½, 8, 9
List prices...	\$3.00	\$3.50	\$4.00

DOMESTIC HEATERS

Name	Boiler Number	Distance c. to c. Opening	Size of Openings	Extreme Diameter Inches	Price List
Mogul.....	1 to 2	1½	¾	8½	\$2.00
".....	3	1½	¾	11½	2.00
".....	4 to 6	2½	1	11½	3.75
".....	7 to 9	2½	1	13½	4.80
Mogul } Recleaning }	1 to 3½	1¾	1	4	2.00
	4 to 9	2½	1	4½	3.00

MOGUL ROUND HOT-WATER BOILERS



Rear View of Two
Twin-Connected High
Base Safford Mogul
Boilers

MOGUL ROUND HOT-WATER BOILERS

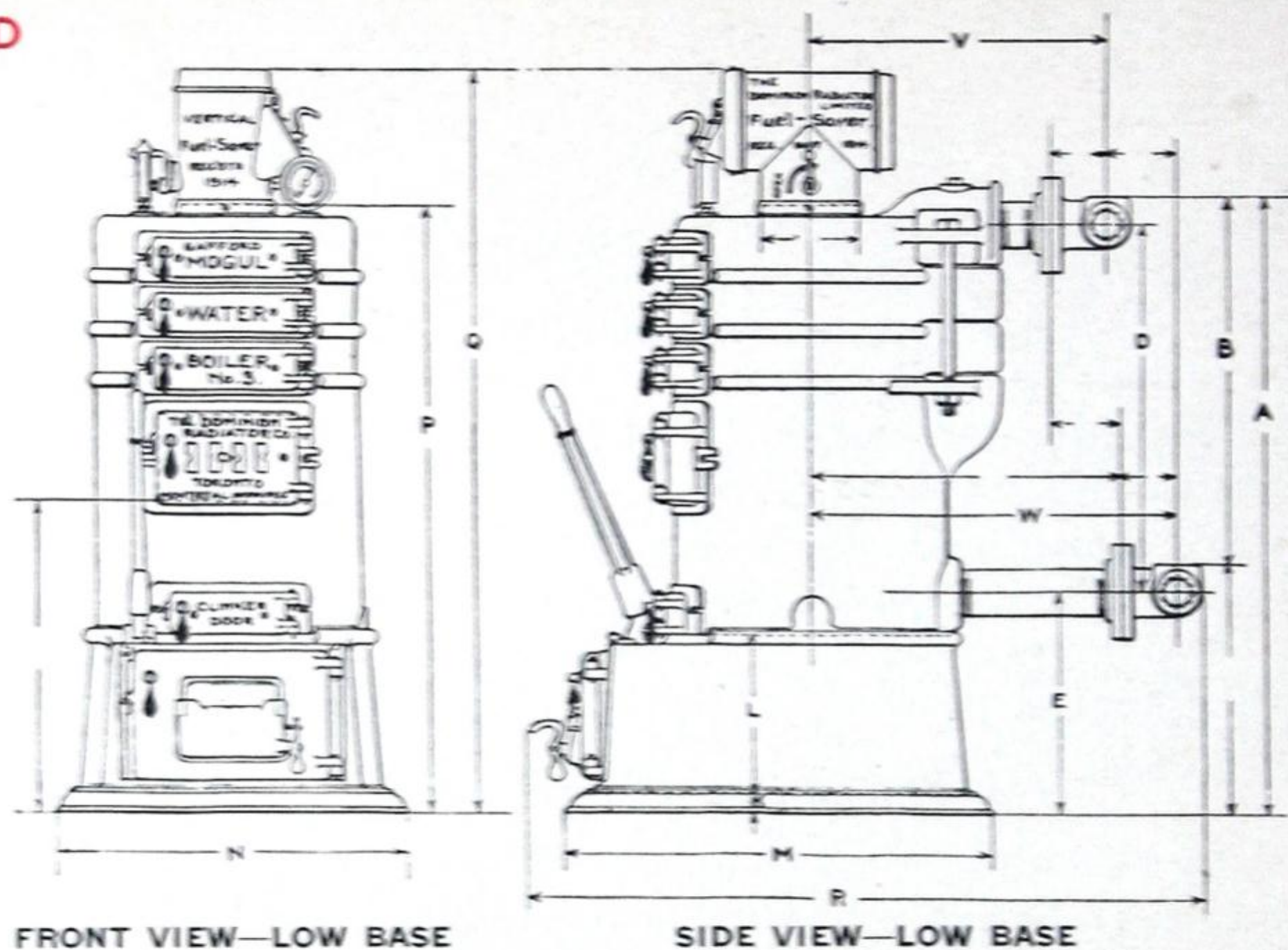
TEST

Each sectional part of the Safford **Mogul** Boiler is tested by a cold water test of 100 pounds to the square inch, and before the boiler is shipped from factory it is assembled and a second test applied of 100 pounds to the square inch. A thorough inspection is given to all castings, so that every practical precaution is exercised to avoid defects and to make this boiler satisfactory to the dealer and to his customer.

EASE OF HANDLING

The sectional parts of this boiler are of such dimensions as to be easily handled and carried through doorways or windows into basements. Owing to the ease with which the slip nipple joint can be made up, the parts of the boiler can be assembled and connected complete and ready for the piping in a few hours' time.

MOGUL ROUND HOT-WATER BOILERS



FRONT VIEW—LOW BASE

SIDE VIEW—LOW BASE

See Note on Ratings, Guarantee and Coverings, pages 7 and 8. Measurements, pages 19 to 21.
Where desired Safford Mogul Round Water Boilers Nos. 5-M to 9-M can be furnished with Special Headers having 4-4 in. flow outlets and 4-4 in. return inlets. These Headers should be described on orders as "Western Headers."
For list prices, dimensions and capacities, see pages 19 to 21.
For amount of asbestos cement required to cover each size of boiler, see page 255.

MOGUL ROUND HOT-WATER BOILERS

Information required for ordering Boilers and Boiler Repairs, see page 116

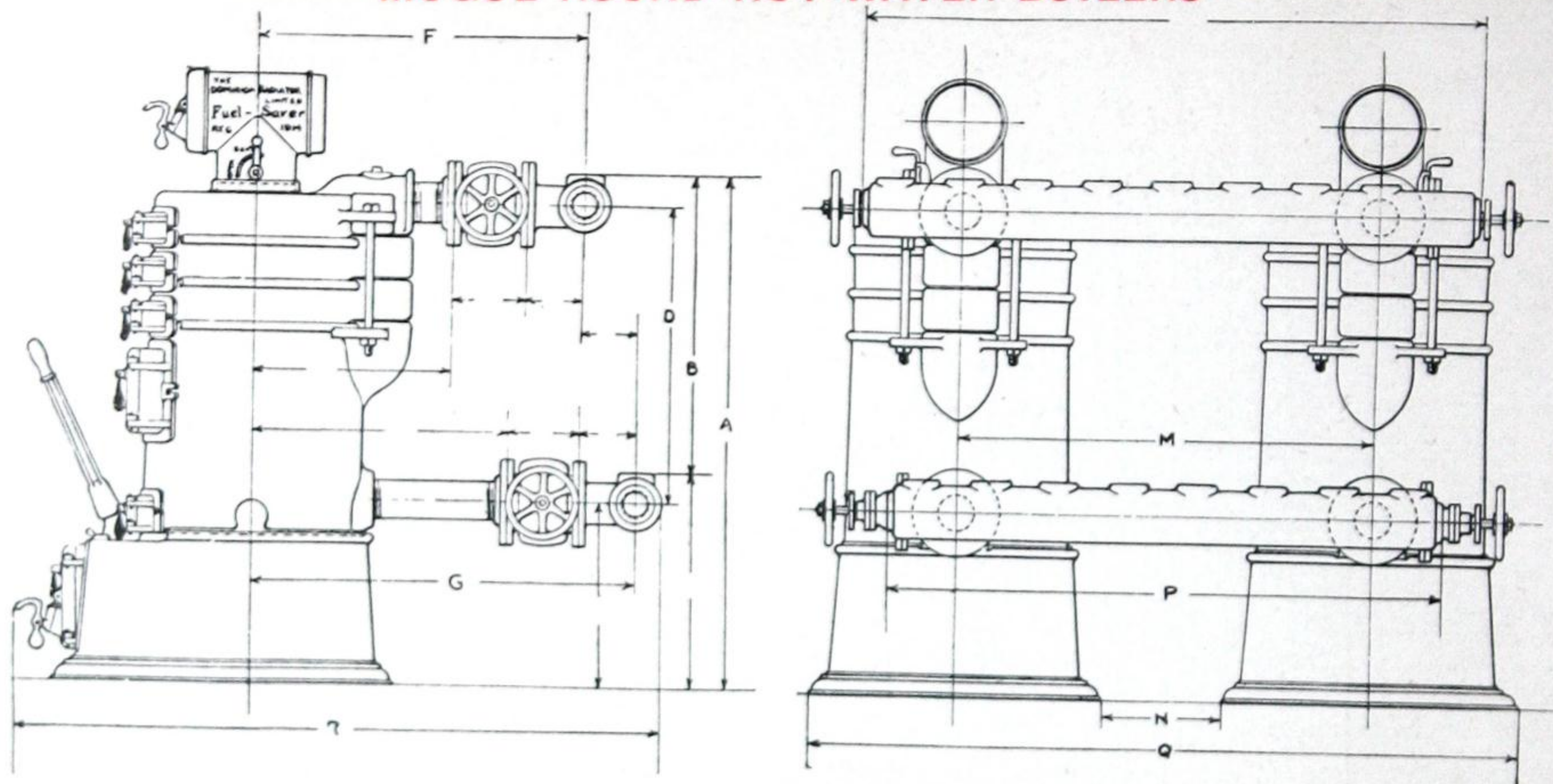
No. of Boiler	List Price Low Base	List Price High Base	Direct Radiation Capacities Exclusive of Mains		Low Base Only										Size of Connections Boiler to Headers	Size of Barrel of Header	No. and Size of Openings on Return Headers. Boilers No. 3 to 9 to have one extra 2 in. opening on Return Header	Nominal Diam. of Grate	Area of Grate Square Feet	Size of Smoke Outlet	Outside Diam. of Fire-Pot	Outside Depth of Fire-Pot	Dimensions For High Base Only				No. of Boiler
			Cast Iron Radi- ation Sq.Ft.	1 in. Iron Pipe Rad. lineal Feet	A	B-D	E	L	N	P	Q	R	V	W									A	E	L	Q	
1 -M	\$105.00	\$111.00	235	700	44	26 ³ / ₄	14 ³ / ₄	11 ¹ / ₂	22 ³ / ₄	42 ³ / ₄	53 ¹ / ₂	50	21 ¹ / ₂	26 ¹ / ₂	3"	3"	4-2"	17	1.50	7	19 ³ / ₄	18	51	21 ³ / ₄	18 ¹ / ₂	60 ¹ / ₂	1 -M
1 ¹ / ₂ -M	125.00	131.00	270	800	48	30 ³ / ₄	14 ³ / ₄	11 ¹ / ₂	22 ³ / ₄	46 ³ / ₄	57 ¹ / ₂	50	21 ¹ / ₂	26 ¹ / ₂	3"	3"	4-2"	17	1.50	7	19 ³ / ₄	18	55	21 ³ / ₄	18 ¹ / ₂	64 ¹ / ₂	1 ¹ / ₂ -M
2 -M	140.00	147.00	335	1000	44 ⁵ / ₈	27 ¹ / ₂	14 ³ / ₄	11 ¹ / ₂	24 ³ / ₄	43 ¹ / ₄	55	51	22 ¹ / ₂	27 ¹ / ₂	3"	3"	4-2"	19	1.91	8	22	18 ¹ / ₂	51 ⁵ / ₈	21 ³ / ₄	18 ¹ / ₂	62	2 -M
2 ¹ / ₂ -M	150.00	157.00	400	1200	48 ⁵ / ₈	31 ¹ / ₂	14 ³ / ₄	11 ¹ / ₂	24 ³ / ₄	47 ¹ / ₄	59	51	22 ¹ / ₂	27 ¹ / ₂	3"	3"	4-2"	19	1.91	8	22	18 ¹ / ₂	55 ⁵ / ₈	21 ³ / ₄	18 ¹ / ₂	66	2 ¹ / ₂ -M
3 -M	160.00	170.00	500	1500	48 ¹ / ₄	30	15 ³ / ₄	12	28 ¹ / ₄	47	59 ¹ / ₂	54 ¹ / ₂	24 ¹ / ₄	29 ¹ / ₄	4"	3"	5-2"	22	2.58	9	25	20	55 ¹ / ₄	22 ³ / ₄	19	66 ¹ / ₂	3 -M
3 ¹ / ₂ -M	180.00	190.00	570	1700	52 ³ / ₄	34 ¹ / ₂	15 ³ / ₄	12	28 ¹ / ₄	51 ¹ / ₂	64	54 ¹ / ₂	24 ¹ / ₄	29 ¹ / ₄	4"	3"	5-2"	22	2.58	9	25	20	59 ³ / ₄	22 ³ / ₄	19	71	3 ¹ / ₂ -M
4 -M	200.00	215.00	670	2000	51 ¹ / ₂	33	16	12	31 ¹ / ₂	50 ¹ / ₂	64 ³ / ₄	56 ¹ / ₂	24 ¹ / ₂	29 ¹ / ₂	4"	4"	6-2"	25	3.34	10	28	23	58 ¹ / ₂	23	19	71 ³ / ₄	4 -M
4 ¹ / ₂ -M	220.00	235.00	750	2250	56	37 ¹ / ₂	16	12	31 ¹ / ₂	55	69 ¹ / ₄	56 ¹ / ₂	24 ¹ / ₂	29 ¹ / ₂	4"	4"	6-2"	25	3.34	10	28	23	63	23	19	76 ¹ / ₄	4 ¹ / ₂ -M
5 -M	240.00	260.00	835	2500	54 ³ / ₄	34 ³ / ₄	17 ¹ / ₂	13	34 ³ / ₄	54 ¹ / ₄	68	62	26 ³ / ₄	31 ³ / ₄	5"	4"	7-2"	28	4.58	10	31 ¹ / ₄	24	62	24 ³ / ₄	20 ¹ / ₄	75 ¹ / ₄	5 -M
5 ¹ / ₂ -M	260.00	280.00	935	2800	59 ³ / ₄	39 ³ / ₄	17 ¹ / ₂	13	34 ³ / ₄	59 ¹ / ₄	73	62	26 ³ / ₄	31 ³ / ₄	5"	4"	7-2"	28	4.58	10	31 ¹ / ₄	24	67	24 ³ / ₄	20 ¹ / ₄	80 ¹ / ₄	5 ¹ / ₂ -M
6 -M	270.00	290.00	1000	3000	56	35 ³ / ₄	17 ¹ / ₂	13	39	55 ¹ / ₄	70 ³ / ₄	65	28 ¹ / ₄	33 ¹ / ₄	5"	5"	8-2"	31	5.15	11	34 ¹ / ₄	25	63 ¹ / ₄	24 ³ / ₄	20 ¹ / ₄	78	6 -M
6 ¹ / ₂ -M	335.00	360.00	1250	3750	56	35 ³ / ₄	17 ¹ / ₂	13	40 ¹ / ₂	55 ¹ / ₄	70 ³ / ₄	66 ¹ / ₂	29	34	5"	5"	8-2"	32 ¹ / ₂	5.70	11	35 ³ / ₄	25	63 ¹ / ₄	24 ³ / ₄	20 ¹ / ₄	78	6 ¹ / ₂ -M
7 -M	392.00	420.00	1500	4500	56 ³ / ₄	35 ⁵ / ₈	18 ¹ / ₄	13	42	55 ³ / ₄	71 ¹ / ₄	69	30 ¹ / ₂	35 ¹ / ₂	6"	5"	8-2"	34	6.20	11	37 ¹ / ₄	25 ¹ / ₂	64	25 ¹ / ₂	20 ¹ / ₄	78 ¹ / ₂	7 -M
7 ¹ / ₂ -M	425.00	453.00	1750	5250	61 ³ / ₄	40 ⁵ / ₈	18 ¹ / ₄	13	42	60 ³ / ₄	76 ¹ / ₄	69	30 ¹ / ₂	35 ¹ / ₂	6"	5"	2-2 ¹ / ₂ " 8-2"	34	6.20	11	37 ¹ / ₄	25 ¹ / ₂	69	25 ¹ / ₂	20 ¹ / ₄	83 ¹ / ₂	7 ¹ / ₂ -M
8 -M	475.00	505.00	2000	6000	57 ¹ / ₂	36 ¹ / ₈	18 ¹ / ₄	13	45	56 ¹ / ₂	72 ¹ / ₂	73	32	37	6"	6"	2-2 ¹ / ₂ " 6-2" 4-2 ¹ / ₂ " 2-3"	37	7.36	12	40 ¹ / ₄	26	64 ³ / ₄	25 ¹ / ₂	20 ¹ / ₄	79 ³ / ₄	8 -M
9 -M	524.00	554.00	2667	8000	Sp'l	Sp'l	18 ¹ / ₄	13	Sp'l	66 ¹ / ₂	82 ¹ / ₂	Sp'l	Sp'l	Sp'l	6"	6"	6-2" 4-2 ¹ / ₂ " 2-3"	Sp'l	Sp'l	12	Sp'l	Sp'l	Sp'l	25 ¹ / ₂	20 ¹ / ₄	89 ³ / ₄	9 -M

See Note on Ratings, Guarantee and Coverings, pages 7 and 8. Additional measurements, pages 20 and 21.

Where desired Safford Mogul Round Water Boilers Nos. 5-M to 9-M can be furnished with Special Headers having 4-4 in. flow outlets and 4-4 in. return inlets. These Headers should be described on orders as "Western Headers." Names and list prices of repair parts, see pages 22 to 27.

For amount of asbestos cement required to cover each size of Boiler, see page 255.

MOGUL ROUND HOT-WATER BOILERS



TWIN CONNECTIONS AND VALVES

No allowance will be made for ordinary Headers. See additional measurements, pages 18 to 21.

Allowance for Valves when not Required.

Nos. 1 -M to 3½-M. \$4.00 each net	Nos. 5 -M to 6-M. \$5.00 each net	Nos. 7-M to 7½-M. \$6.25 each net
Nos. 3½-M to 4½-M. \$4.00 each net	No. 6½-M. \$5.75 each net	Nos. 8-M to 9 -M. 7.50 each net

NOTE.—When a larger and smaller size Boiler are connected together, use list on Headers for larger size.

MOGUL ROUND HOT-WATER BOILERS

LIST PRICES AND DATA

Twin, Triple and Quadruple Connections

No. of Boiler	Price List of Connections Including Valves			Inside Diameter of Headers			No. and Sizes of Valves			Twin Connections Only										No. of Boiler
	Twin	Triple	Quad.	Twin	Triple	Quad.	Twin	Triple	Quad.	No. and Sizes of Outlets Ins.	Low Base A	High Base A	These Measurements are the same for Low and High Base Boilers							
													B-D	F	G	R	M	N	Q	
1 -M	\$110.00	\$160.00	\$220.00	4"	5"	6"	4-3"	6-3"	8-3"	8-2"	44	51	26 ³ / ₄	29	35 ¹ / ₂	58	34 ¹ / ₄	11 ¹ / ₂	57	1 -M
1 ¹ / ₂ -M	110.00	160.00	220.00	4"	5"	6"	4-3"	6-3"	8-3"	8-2"	48	55	30 ³ / ₄	29	35 ¹ / ₂	58	34 ¹ / ₄	11 ¹ / ₂	57	1 ¹ / ₂ -M
2 -M	110.00	160.00	220.00	4"	5"	6"	4-3"	6-3"	8-3"	8-2"	44 ⁵ / ₈	51 ⁵ / ₈	27 ¹ / ₂	30	36 ¹ / ₂	61	34 ¹ / ₄	9 ¹ / ₂	59	2 -M
2 ¹ / ₂ -M	110.00	160.00	220.00	4"	5"	6"	4-3"	6-3"	8-3"	8-2"	48 ⁵ / ₈	55 ⁵ / ₈	31 ¹ / ₂	30	36 ¹ / ₂	61	34 ¹ / ₄	9 ¹ / ₂	59	2 ¹ / ₂ -M
3 -M	110.00	160.00	220.00	5"	6"	7"	4-4"	6-4"	8-4"	8-2"	48 ¹ / ₄	55 ¹ / ₄	30	32 ³ / ₄	39 ¹ / ₂	65	37 ³ / ₈	9 ¹ / ₄	66	3 -M
3 ¹ / ₂ -M	110.00	160.00	220.00	5"	6"	7"	4-4"	6-4"	8-4"	8-2"	52 ³ / ₄	59 ³ / ₄	34 ¹ / ₂	32 ³ / ₄	39 ¹ / ₂	65	37 ³ / ₈	9 ¹ / ₄	66	3 ¹ / ₂ -M
4 -M	110.00	160.00	220.00	5"	6"	7"	4-4"	6-4"	8-4"	10-2"	51 ¹ / ₂	58 ¹ / ₂	33	33 ³ / ₄	40 ¹ / ₂	68	42	10 ¹ / ₂	73 ¹ / ₂	4 -M
4 ¹ / ₂ -M	110.00	160.00	220.00	5"	6"	7"	4-4"	6-4"	8-4"	10-2"	56	63	37 ¹ / ₂	33 ³ / ₄	40 ¹ / ₂	68	42	10 ¹ / ₂	73 ¹ / ₂	4 ¹ / ₂ -M
5 -M	135.00	200.00	270.00	6"	7"	8"	4-5"	6-5"	8-5"	12-2"	54 ³ / ₄	62	34 ³ / ₄	37 ³ / ₄	44 ¹ / ₂	74	46 ¹ / ₂	11 ³ / ₄	81 ¹ / ₂	5 -M
5 ¹ / ₂ -M	135.00	200.00	270.00	6"	7"	8"	4-5"	6-5"	8-5"	12-2"	59 ³ / ₄	67	39 ³ / ₄	37 ³ / ₄	44 ¹ / ₂	74	46 ¹ / ₂	11 ³ / ₄	81 ¹ / ₂	5 ¹ / ₂ -M
6 -M	135.00	200.00	270.00	6"	7"	8"	4-5"	6-5"	8-5"	16-2"	56	63 ¹ / ₄	35 ³ / ₄	40	46 ¹ / ₂	78	49 ¹ / ₂	10 ¹ / ₂	88 ¹ / ₂	6 -M
6 ¹ / ₂ -M	175.00	250.00	350.00	7"	8"	9"	4-5"	6-5"	8-5"	16-2"	56	63 ¹ / ₄	35 ³ / ₄	40 ³ / ₄	47 ¹ / ₂	80	49 ¹ / ₂	9	90	6 ¹ / ₂ -M
7 -M	190.00	300.00	380.00	8"	9"	10"	4-6"	6-6"	8-6"	20-2"	56 ³ / ₄	64	35 ⁵ / ₈	43 ¹ / ₂	50 ¹ / ₂	84	52 ³ / ₄	10 ³ / ₄	95	7 -M
7 ¹ / ₂ -M	190.00	300.00	380.00	8"	9"	10"	4-6"	6-6"	8-6"	20-2"	61 ³ / ₄	69	40 ⁵ / ₈	43 ¹ / ₂	50 ¹ / ₂	84	52 ³ / ₄	10 ³ / ₄	95	7 ¹ / ₂ -M
8 -M	230.00	350.00	460.00	8"	9"	10"	4-6"	6-6"	8-6"	20-2"	57 ¹ / ₂	64 ³ / ₄	36 ¹ / ₈	45 ³ / ₄	53	88	55 ³ / ₄	10 ³ / ₄	100	8 -M
9 -M	250.00	400.00	500.00	8"	9"	10"	4-6"	6-6"	8-6"	26-2"	Sp'l	Sp'l	Sp'l	Sp'l	Sp'l	Sp'l	Sp'l	Sp'l	Sp'l	9 -M

See Note on Ratings and Guarantee, pages 7 and 8. Additional measurements, pages 18 to 21.

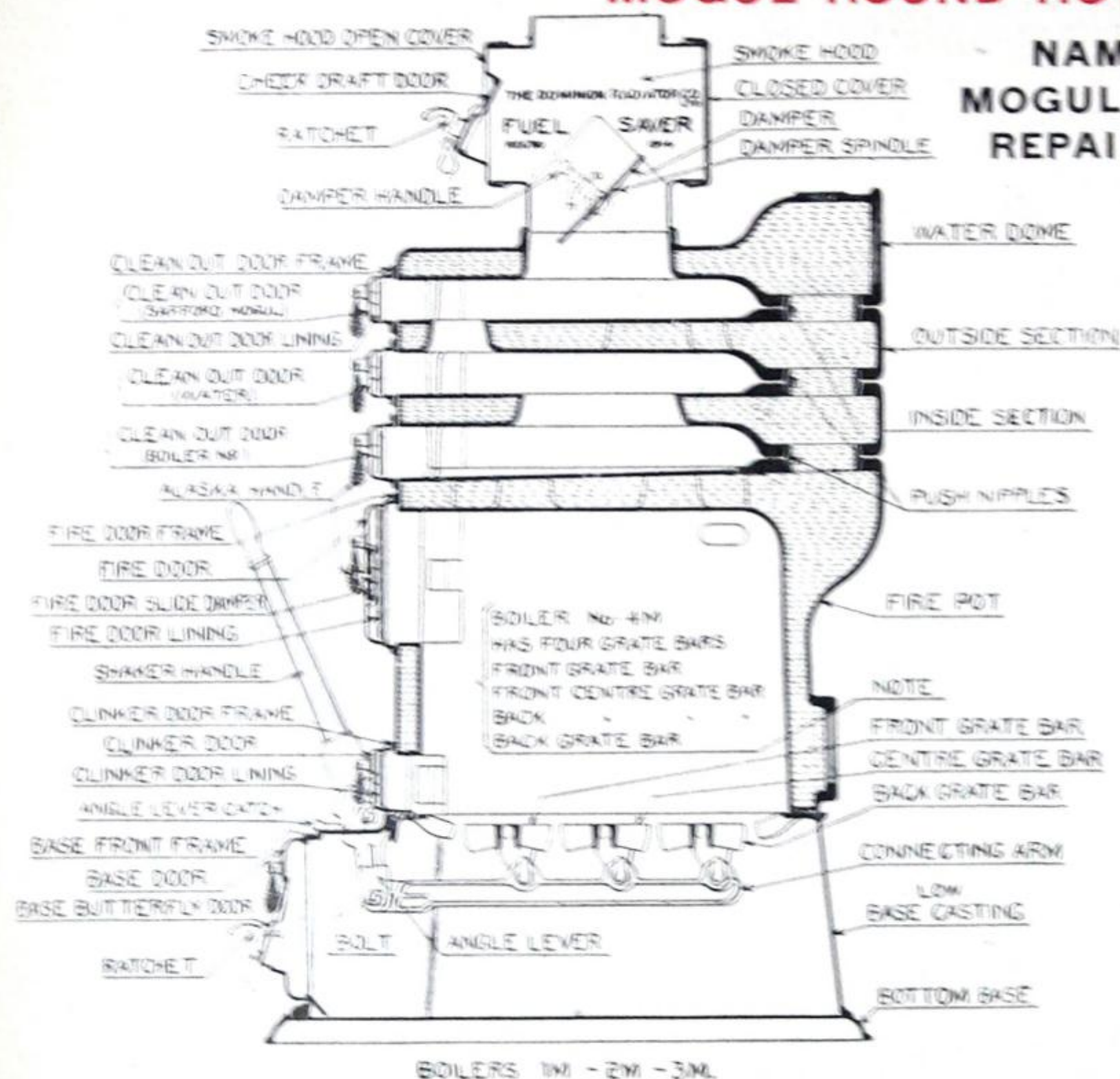
Where desired Safford Mogul Round Water Boilers Nos. 5-M to 9-M can be furnished with Special Headers having 4-4 in. flow outlets and 4-4 in. return inlets. These Headers should be described on orders as "Western Headers."

Names and list prices of repair parts, see pages 22 to 27.

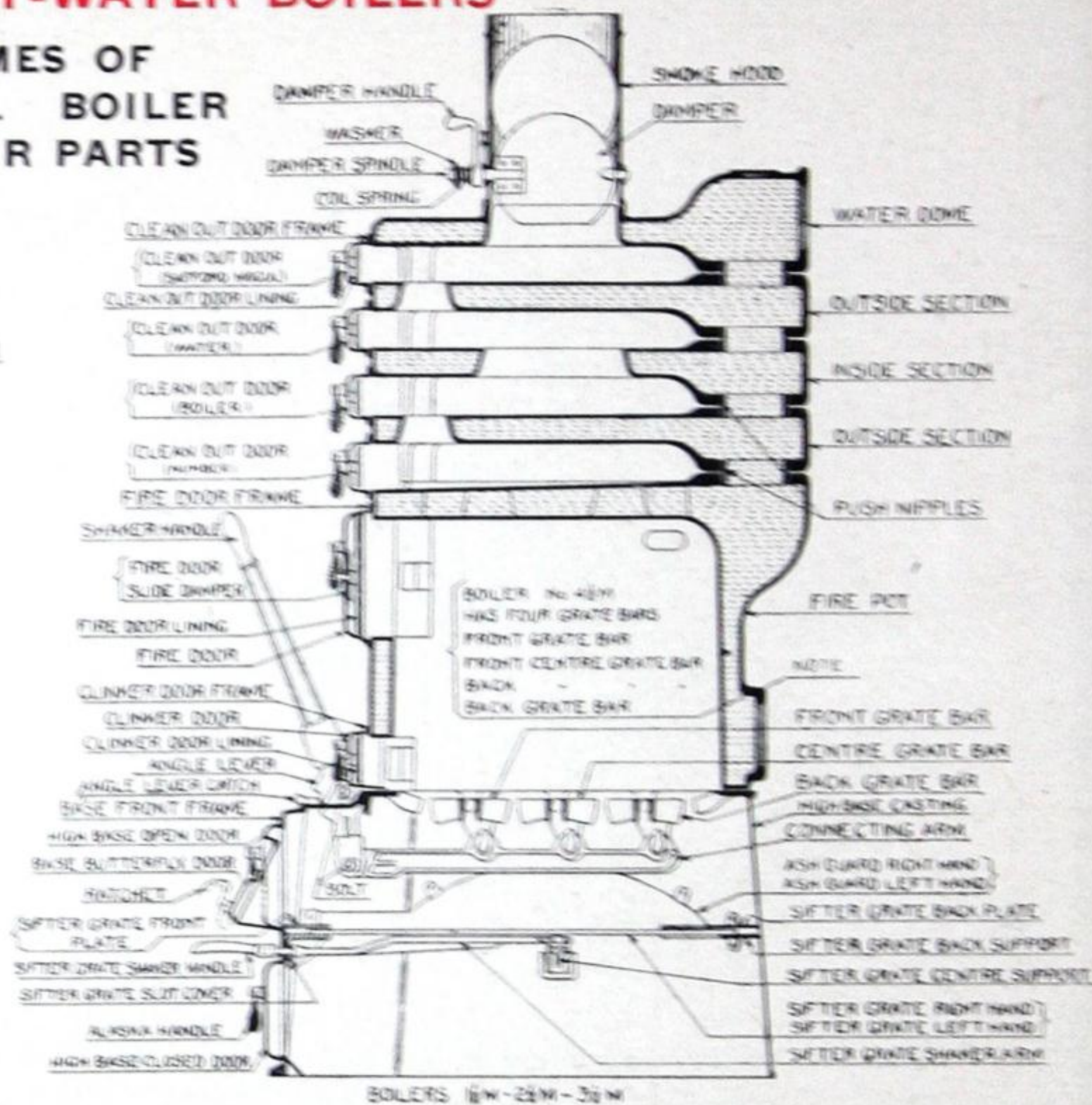
For amount of asbestos cement required to cover each size of boiler, see page 255.

MOGUL ROUND HOT-WATER BOILERS

NAMES OF MOGUL BOILER REPAIR PARTS



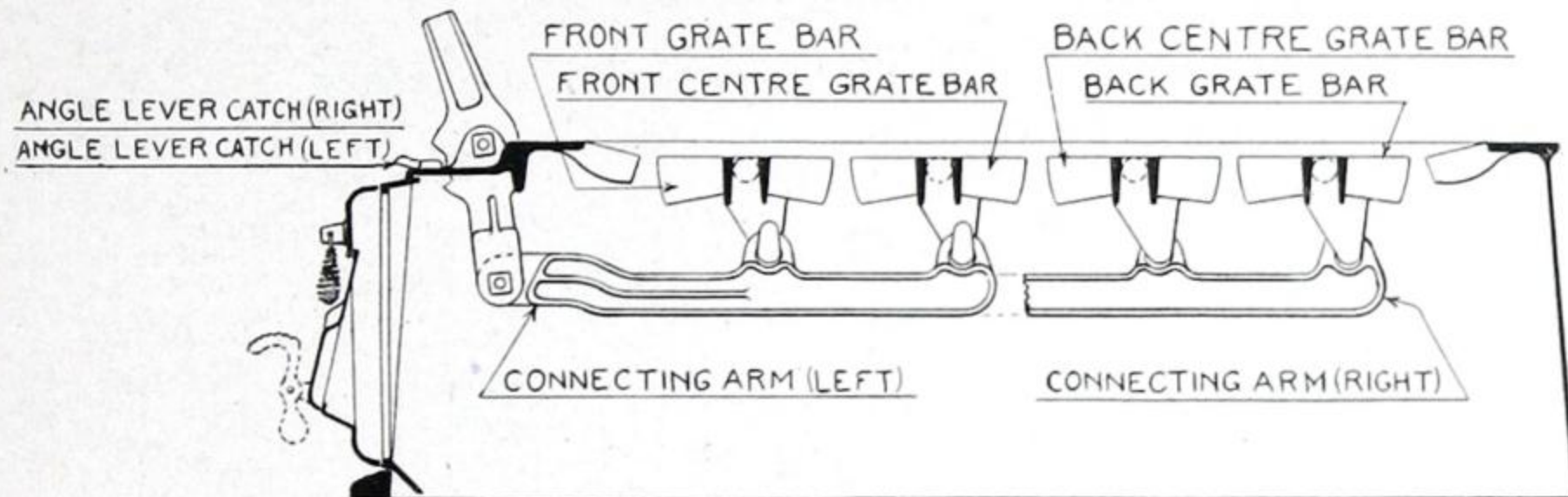
BOILERS 1M - 2M - 3M



BOILERS 1 1/2M - 2 1/2M - 3 1/2M

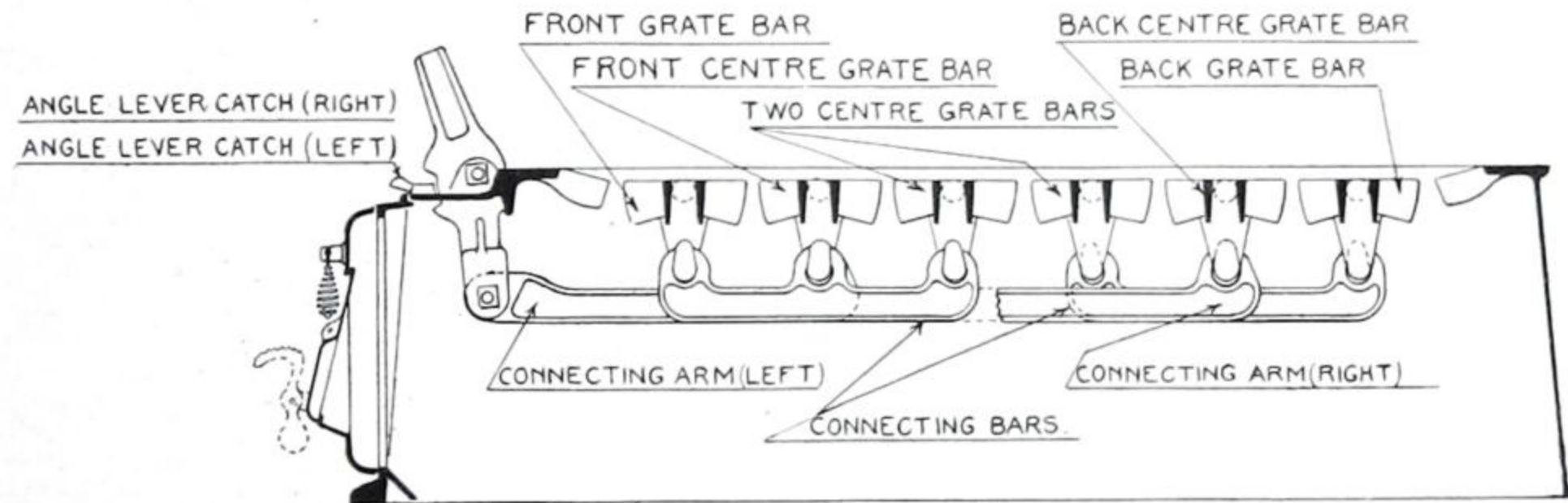
The shaking parts and grate bar parts of boilers 1M, 1 1/2M, 2M, 2 1/2M, 3M, 3 1/2M, are named as in above illustrations. 4M, and 4 1/2M have four grate bars instead of three, but the shaking parts are named as above. The shaking parts and grate bar parts of Boilers 5M to 9M are shown on page 23. Names and list prices of repair parts will be found on pages 22 to 27.

MOGUL ROUND HOT-WATER BOILERS



NAMES OF MOGUL BOILER REPAIR PARTS

GRATE BARS AND CONNECTING ARMS FOR BOILERS Nos. 5M-5 1/2 M-6M-6 1/2 M-7M-7 1/2 M



GRATE BARS AND CONNECTING ARMS FOR BOILERS Nos. 8M-9M

Names and list prices of repair parts will be found on pages 22 to 27.

MOGUL ROUND HOT-WATER BOILERS

NAMES AND LIST PRICES OF MOGUL BOILER REPAIR PARTS

Name of Part	1-M		2-M		3-M		4-M		5-M	
	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price
LOW BASE										
Base Bottom.....	1-13	\$10.00	1-13	\$12.00	1-13	\$16.00	1-13	\$20.00		
Base Casting.....	2-13	16.00	2-13	22.00	2-13	28.00	2-13	31.00	2-13	\$43.00
Base Front Frame.....	3-13	1.40	3-13	1.40	3-13	1.50	3-13	1.50	3-13	2.20
Base Ash Door.....	4-13	1.60	4-13	1.60	4-13	1.70	4-13	1.70	4-13	2.40
Base Butterfly Door....	5-13	.50	5-13	.50	5-13	.60	5-13	.60	5-13	.80
Front Grate Bar.....	S-17-101	1.75	S-19-101	2.25	S-22-101	2.75	S-25-101	3.00	S-28-101	3.50
Centre Grate Bar.....	S-17-102	2.25	S-19-102	2.75	S-22-102	3.70				
Back Grate Bar.....	S-17-104	1.75	S-19-104	2.25	S-22-104	2.75	S-25-104	3.00	S-28-104	3.50
Front Centre Grate Bar							S-25-102	3.70	S-28-102	5.20
Back Centre Grate Bar							S-25-103	3.70	S-28-103	5.20
Connecting Arm (left) ..	8-13	1.00	8-13	1.10	8-13	1.00	8-13	1.30	8-13	1.00
Connecting Arm (right) ..									8-13	1.30
Connecting Bar.....										
Angle Lever.....	6-13	.80	6-13	.80	6-13	.80	6-13	.80	6-13	.80
Shaker Handle.....	1-M7-13	1.00	1-M7-13	1.00	1-M7-13	1.00	1-M7-13	1.00	24-17-98	1.00
Fire-pot.....	29-13	50.00	29-13	60.00	29-13	75.00	29-13	95.00	29-13	120.00
Fire Door Frame.....	15-13	2.10	15-13	2.10	15-13	2.00	15-13	2.20	15-13	2.20
Fire Door.....	16-13	1.30	16-13	1.30	16-13	1.30	16-14	1.50	4 & 5-16-14	1.50
Fire Door Slide Damper	17-13	.20	17-13	.20	17-13	.20	17-14	.20	17-14	.20
Fire Door Lining.....	18-13	.80	18-13	.80	18-13	1.00	18-14	1.20	18-14	1.20
Clinker Door Frame....	19-13	1.00	19-13	1.00	19-13	1.00	19-13	1.00	19-13	1.00
Clinker Door.....	20-13	.60	20-13	.60	20-13	.40	20-13	.40	20-13	.40
Clinker Door Lining....	21-13	.30	21-13	.30	21-13	.30	21-13	.30	21-13	.30
Inside Section.....	30-13	16.00	30-13	19.00	30-13	24.00	30-13	29.00	30-13	35.00
Outside Section.....	31-13	17.00	31-13	20.00	31-13	25.00	31-13	30.00	31-13	38.00
Water Dome.....	32-13	17.00	32-13	19.00	32-13	25.00	32-13	32.00	32-13	40.00
Clean-Out Door Frame..	22-13	1.40	22-13	1.40	22-13	1.70	22-13	1.70	22-13	2.00

MOGUL ROUND HOT-WATER BOILERS**NAMES AND LIST PRICES OF MOGUL BOILER REPAIR PARTS**

Name of Part	6-M		6½-M		7-M		8-M	
	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price
LOW BASE								
Base Bottom.....	2-13	\$44.00	2-13	\$46.00	2-13	\$48.00	2-13	\$60.00
Base Casting.....	3-13	2.20	3-13	2.40	3-13	2.60	3-13	2.80
Base Front Frame.....	4-13	2.40	4-13	3.00	4-13	3.00	4-13	3.00
Base Ash Door.....	5-13	.80	5-13	.80	5-13	.80	5-13	.80
Base Butterfly Door.....	S-31-101	4.65	8½-32½-101	4.65	S-34-101	4.80	S-37-101	3.35
Front Grate Bar.....	S-31-104	4.65	S-32½-104	4.65	S-34-104	4.80	S-37-103	6.00 ea.
Centre Grate Bar.....	S-31-102	6.40	S-32½-102	6.75	S-34-102	7.00	S-37-106	3.35
Back Grate Bar.....	S-31-103	6.40	S-32½-103	6.75	S-34-103	7.00	S-37-102	5.30
Front Centre Grate Bar.....	8-13	1.00	8-13	1.00	8-13	1.00	S-37-102	5.30
Back Centre Grate Bar.....	8-13	1.40	8-13	1.60	8-13	1.60	8-13	.80
Connecting Arm (left).....							8½-13	1.40
Connecting Arm (right).....							8-13	.80
Connecting Bar.....	6-13	.80	6-13	.80	6-13	.80	6-13	.80
Angle Lever.....	24-17-98	1.00	24-17-98	1.00	24-17-98	1.70	24-17-98	1.70
Shaker Handle.....	29-13	150.00	29-15	165.00	29-13	180.00	29-13	200.00
Fire-pot.....	15-14	2.40	15-14	2.40	15-14	2.40	15-14	2.40
Fire Door Frame.....	16-14	1.50	16-14	1.50	16-14	1.50	16-14	1.50
Fire Door.....	17-14	.20	17-14	.20	17-14	.20	17-14	.20
Fire Door Slide Damper.....	18-14	1.20	18-14	1.20	18-14	1.20	18-14	1.20
Fire Door Lining.....	19-14	1.00	19-14	1.00	19-14	1.00	19-14	1.00
Clinker Door Frame.....	20-14	.60	20-14	.60	20-14	.60	20-14	.60
Clinker Door.....	21-14	.30	21-14	.30	21-14	.30	21-14	.30
Clinker Door Lining.....	30-13	47.00	30-15	52.00	30-13	56.00	30-14	64.00
Inside Section.....	31-13	48.00	31-15	54.00	31-13	58.00	31-14	72.00
Outside Section.....	32-13	48.00	32-15	58.00	32-13	65.00	32-14	74.00
Water Dome.....	22-13	2.00	22-15	2.00	22-14	2.00	22-14	2.00
Clean-Out Door Frame.....								

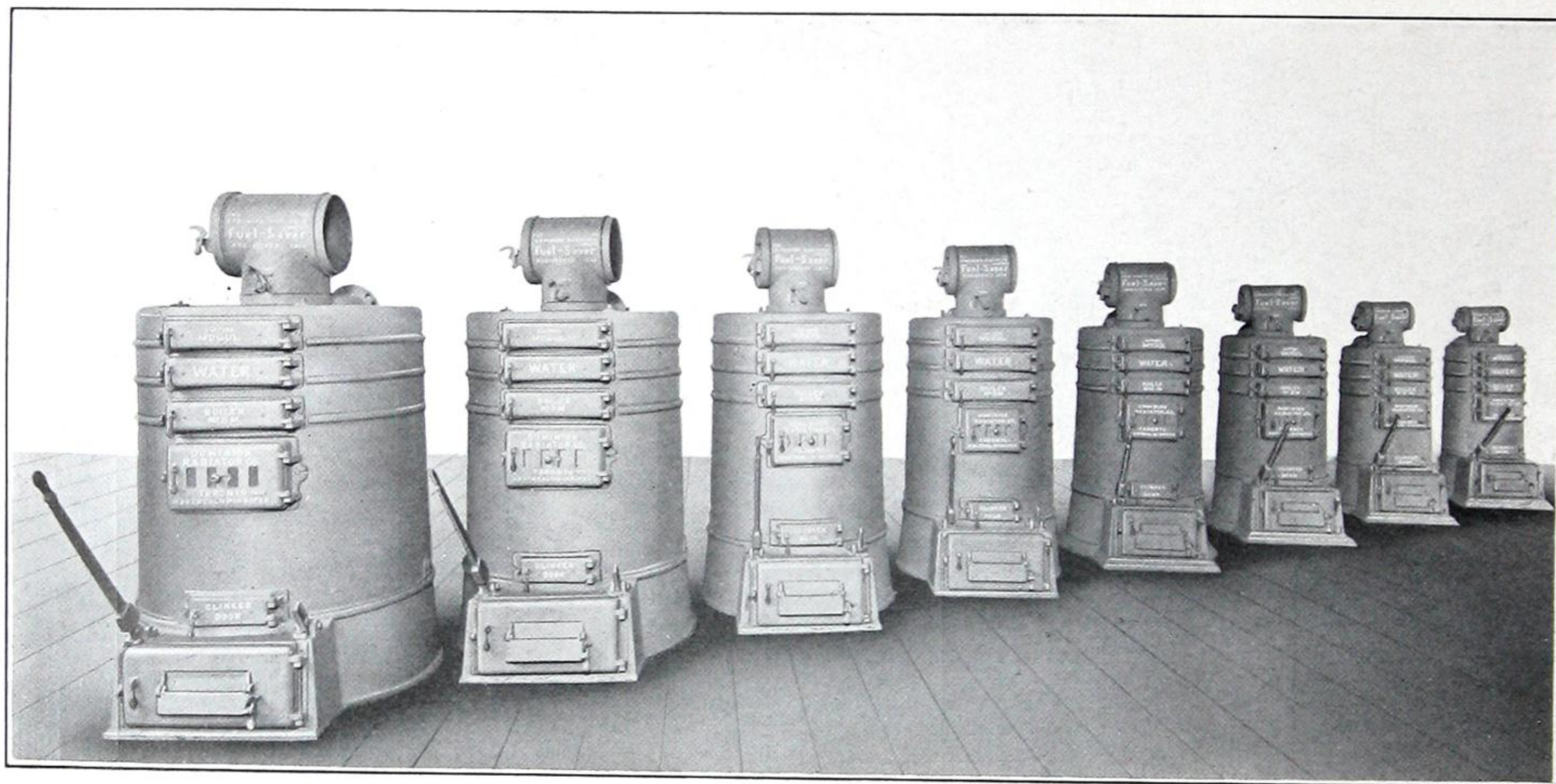
MOGUL ROUND HOT-WATER BOILERS

NAMES AND LIST PRICES OF MOGUL BOILER REPAIR PARTS

Name of Part	1-M		2-M		3-M		4-M		5-M	
	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price
Clean-Out Door "Safford Mogul"	33-13	\$.70	33-13	\$.70	33-13	\$.80	33-13	\$0.80	33-13	\$1.00
Clean-Out Door "Water"	34-13	.70	34-13	.70	34-13	.80	34-13	.80	168-9-14	1.00
Clean-Out Door "Boiler No."	35-13	.70	35-13	.70	35-13	.80	35-13	.80	35-13	1.00
Clean-Out Door Lining	24-13	.30	24-13	.30	24-13	.40	24-13	.40	164-9M-14	.50
Nipple	3 inch	.30	3 inch	.30	4 inch	.40	4 inch	.40	5 inch	.50
Smoke-Hood (Combination)	25½-13	4.60	25½-13	5.40	25½-13	6.00	25½-13	6.30	25½-13	6.30
Smoke-Hood Cover	26-13	.80	26-13	.80	26-13	.80	26-13	1.30	26-13	1.30
Smoke-Hood Check Draft Door ..	27-13	.30	27-13	.40	27-13	.40	27-13	.40	27-13	.40
Smoke-Hood Damper	28-13	.30	28-13	.40	28-13	.40	28-13	.60	28-13	.60
Spindle Plate for Handle	no number	.10	no number	.10	no number	.20	no number	.20	no number	.20
Damper Handle	"	.20	"	.20	"	.20	"	.20	"	.20
Coil Spring and Washer	"	.15	"	.15	"	.15	"	.15	"	.15
Closed Cover for S. H.	26½-13	.60	26½-13	.70	26½-13	.80	26½-13	1.10	26½-13	1.10
Ratchet	no number	.10	no number	.10	no number	.10	no number	.10	no number	.10
Check Lug, Left and Right	S-25-107	.10	S-25-107	.10	S-25-107	.10	S-25-107	.10	S-25-107	.10
HIGH BASE										
Base Casting	36-14	26.00	36-14	35.00	36-14	36.00	36-14	44.00	36-14	50.00
Base Front Frame	37-14	3.40	37-14	3.40	37-14	4.00	37-14	4.00	37-14	5.00
Base Ash (Closed) Door	39-14	1.20	39-14	1.20	39-14	1.40	39-14	1.40	39-14	1.80
Base Ash (Open) Door	38-14	1.20	38-14	1.20	38-14	1.50	38-14	1.50	38-14	1.90
Base Butterfly Door	5-13	.50	5-13	.50	40-14	.50	40-14	.50	5M-13	.70
Ash Guard (Right Hand)	43-14	.60	43-14	.80	43-14	1.10	43-14	1.50	43-14	2.20
Ash Guard (Left Hand)	44-14	.60	44-14	.80	44-14	1.10	44-14	1.50	44-14	2.20
Sifter Grate (Right Hand)	41-14	2.10	41-14	2.40	41-14	2.90	41-14	3.30	41-14	4.70
Sifter Grate (Left Hand)	42-14	2.10	42-14	2.40	42-14	2.90	42-14	3.30	42-14	4.70
Sifter Grate (Centre Support)	46-14	.80	46-14	1.10	46-14	1.20	46-14	1.40	46-14	1.80
Sifter Grate Front Plate	51-14	.80	51-14	.80	51-14	1.20	51-14	1.20	51-14	1.40
Sifter Grate Back Plate	50-14	.80	50-14	.80	50-14	1.00	50-14	1.00	50-14	1.20
Sifter Grate Bottom Support	49-14	.60	49-14	.80	49-14	.80	49-14	.80	49-14	1.20
Sifter Grate Shaker Arm	45-14	.80	45-14	.80	45-14	1.00	45-14	1.20	45-14	1.30
Sifter Grate Handle	48-14	.20	48-14	.20	48-14	.20	48-14	.20	48-14	.20
Sifter Grate Shaker Arm Slide	47-14	.20	47-14	.20	47-14	.20	47-14	.20	47-14	.20

MOGUL ROUND HOT-WATER BOILERS **NAMES AND LIST PRICES OF MOGUL BOILER REPAIR PARTS**

Name of Part	6-M		6½-M		7-M		8-M	
	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price	No. of Casting	List Price
Clean-Out Door "Safford Mogul".....	33-13	\$1.00	33-13	\$1.00	33-13	\$1.00	33-13	\$1.00
Clean-Out Door "Water".....	168-9-14	1.00	168-9-14	1.00	168-9-14	1.00	168-9-14	1.00
Clean-Out Door "Boiler No.".....	35-13	1.00	35-13	1.00	35-13	1.00	35-13	1.00
Clean-Out Door Lining.....	164-9M-14	.50	164-9M-14	.50	164-9M-14	.50	164-9M-14	.50
Nipple.....	5 inch	.50	5 inch	.50	6 inch	.70	6 inch	.70
Smoke-Hood (Combination).....	25½-13	8.20	25½-13	8.20	25½-13	8.20	25½-13	10.00
Smoke-Hood Cover.....	26-13	1.40	26-13	1.40	26-13	1.40	26-13	1.80
Smoke-Hood Check Draft Door.....	27-13	.60	27-13	.60	27-13	.60	27-13	.60
Smoke-Hood Damper.....	28-13	.80	28-13	.80	28-13	.80	28-13	.80
Spindle Plate for Handle.....	no number	.20	no number	.20	no number	.20	no number	.20
Damper Handle.....	"	.20	"	.20	"	.20	"	.20
Coil Spring and Washer.....	"	.15	"	.15	"	.15	"	.15
Closed Cover for S. H.....	26½-13	1.20	26½-13	1.20	26½-13	1.20	26½-13	1.90
Ratchet.....	no number	.10	no number	.10	no number	.10	no number	.10
Check Lug, Left and Right.....	S-25-107	.10	S-25-107	.10	S-25-107	.10	S-25-107	.10
	S-25-108	.10	S-25-108	.10	S-25-108	.10	S-25-108	.10
HIGH BASE								
Base Casting.....	36-14	54.00	36-14	60.00	36-14	65.00	36-14	80.00
Base Front Frame.....	37-14	5.40	37-14	5.40	37-14	5.40	37-14	5.40
Base Ash (Closed) Door.....	39-14	1.80	39-14	2.20	39-14	2.30	39-14	2.30
Base Ash (Open) Door.....	38-14	1.90	38-14	2.10	38-14	2.20	38-14	2.20
Base Butterfly Door.....	5M-13	.70	5M-13	.70	5M-13	.70	5M-13	.70
Ash Guard (Right Hand).....	43-14	2.50	43-14	2.80	43-14	3.00	43-14	3.40
Ash Guard (Left Hand).....	44-14	2.50	44-14	2.80	44-14	3.00	44-14	3.40
Sifter Grate (Right Hand).....	41-14	5.00	41-14	5.20	41-14	5.50	41-14	6.60
Sifter Grate (Left Hand).....	42-14	5.00	42-14	5.20	42-14	5.50	42-14	6.60
Sifter Grate (Centre Support).....	46-14	2.00	46-14	2.10	46-14	2.20	46-14	2.40
Sifter Grate Front Plate.....	51-14	1.40	51-14	1.40	51-14	1.40	51-14	1.40
Sifter Grate Back Plate.....	50-14	1.20	50-14	1.30	50-14	1.30	50-14	1.30
Sifter Grate Bottom Support.....	49-14	1.20	49-14	1.30	49-14	1.40	49-14	1.40
Sifter Grate Shaker Arm.....	45-14	1.40	45-14	1.50	45-14	1.70	45-14	1.70
Sifter Grate Handle.....	48-14	.20	48-14	.20	48-14	.20	48-14	.20
Sifter Grate Shaker Arm Slide.....	47-14	.20	47-14	.20	47-14	.20	47-14	.20

MOGUL ROUND HOT-WATER BOILERS

THE MOGUL LINE OF ROUND HOT-WATER BOILERS

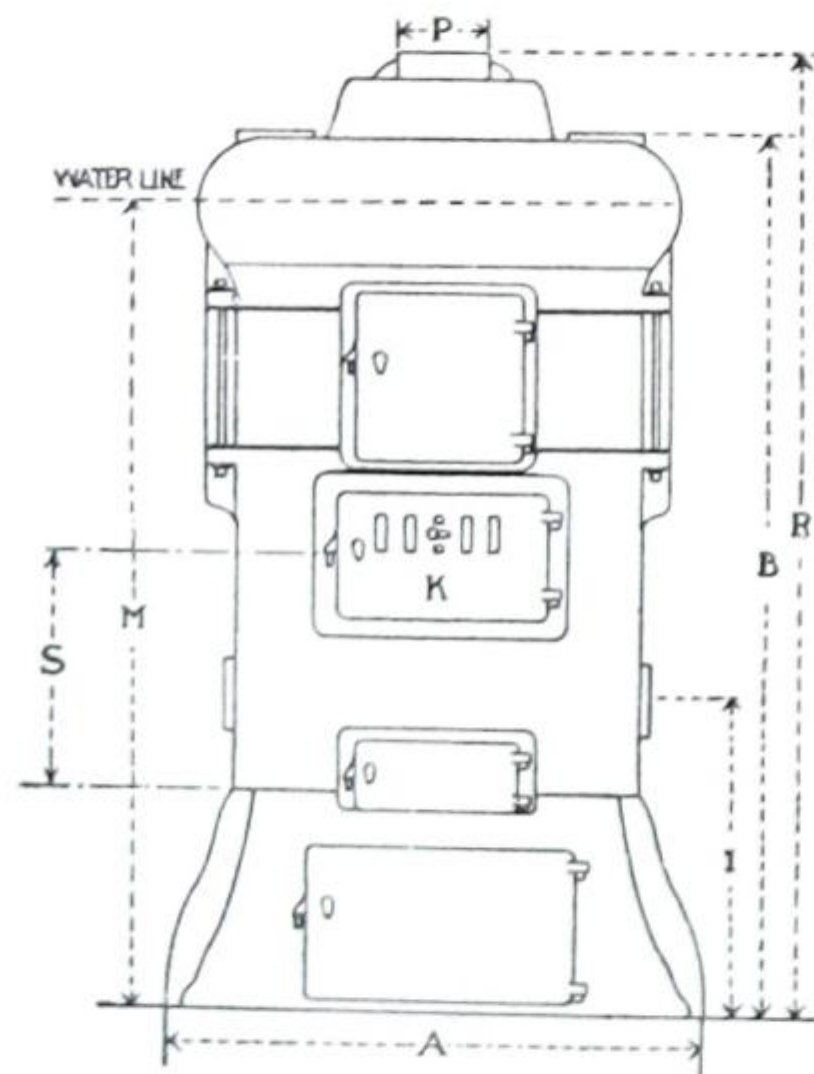
THE
S A F F O R D
ROUND STEAM BOILERS

SAFFORD ROUND STEAM BOILERS ARE MADE IN 18
SIZES, WITH CAPACITIES RANGING FROM 300 TO
1,650 SQUARE FEET OF RADIATION INCLUDING MAINS

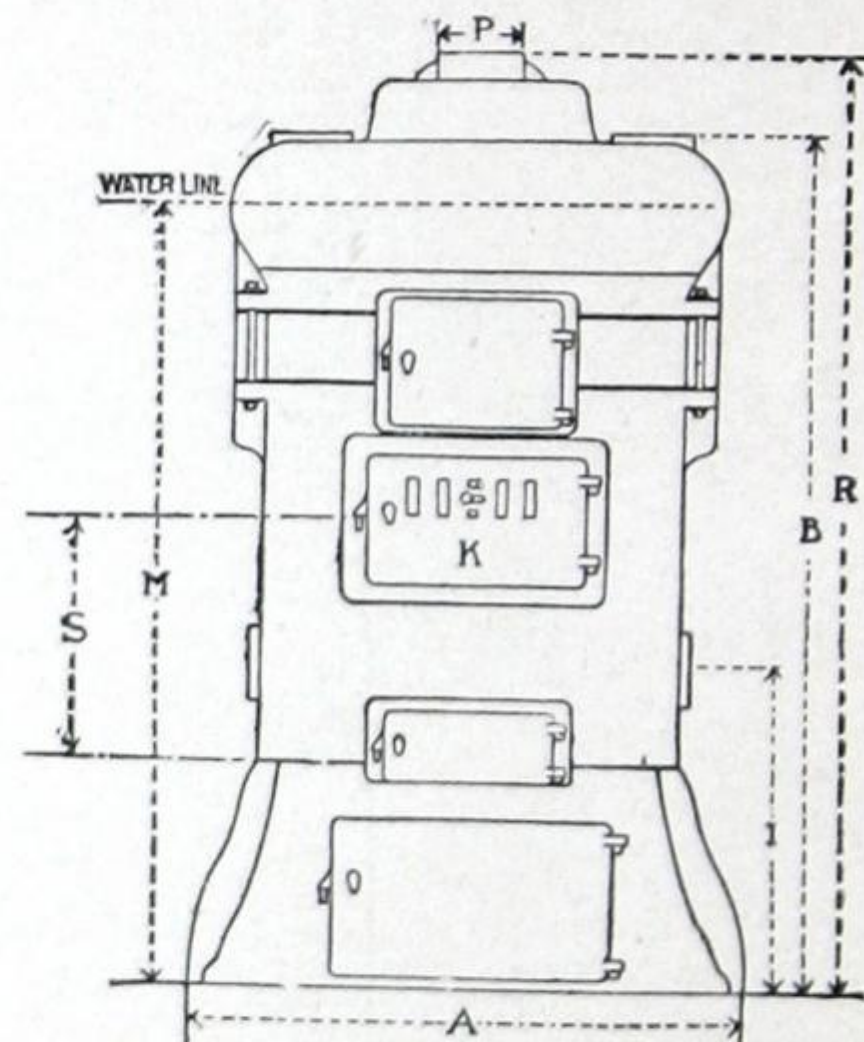
Information required for ordering Boilers and Boiler repairs, see page 116

MANUFACTURED BY
THE
DOMINION RADIATOR COMPANY
LIMITED

St. John Montreal Hamilton **TORONTO** Winnipeg Calgary Vancouver

SAFFORD ROUND STEAM BOILERS

For measurements, see page 32.

**NO. 6-28-S STEAM BOILER**

For measurements, see page 32.

SAFFORD ROUND STEAM BOILERS

LIST PRICES AND DATA

Information required for ordering Boilers and Boiler Repairs, see page 116

No.	List Price	Gross Rating Square Feet	Gross Rating Lineal Feet 1" Pipe	Diameter of Grate Inches	Height to Top Outlet Inches	Height to Centre of Return Inches	Height of Water Line Inches	Outlets, Number and Size	Inlets, Number and Size	Size of Smoke Pipe Inches	Approx. Shipp'g Weight Lbs.	No.
4-19-S	\$205.00	300	900	19	52½	14¾	45½	1-2½"	2-2½"	8	1000	4-19-S
5-19-S	215.00	350	1050	19	57	14¾	50	1-2½"	2-2½"	8	1150	5-19-S
6-19-S	235.00	400	1200	19	61⅝	14¾	54⅝	1-2½"	2-2½"	8	1300	6-19-S
4-22-S	255.00	450	1350	22	54	15¾	47	1-3"	2-3"	9	1350	4-22-S
5-22-S	295.00	525	1575	22	58½	15¾	51½	1-3"	2-3"	9	1450	5-22-S
6-22-S	312.50	575	1725	22	63¼	15¾	56¼	1-3"	2-3"	9	1625	6-22-S
4-25-S	295.00	550	1650	25	55⅝	16¼	47⅞	1-3½"	2-3½"	9	1575	4-25-S
5-25-S	325.00	625	1875	25	60¼	16¼	52½	1-3½"	2-3½"	9	1700	5-25-S
6-25-S	337.50	700	2100	25	65⅜	16¼	57⅝	1-3½"	2-3½"	9	1900	6-25-S
4-28-S	375.00	800	2400	28	57⅝	16⅜	49¼	1-4"	2-4"	10	1900	4-28-S
5-28-S	400.00	900	2700	28	62⅝	16⅜	54¼	1-4"	2-4"	10	2125	5-28-S
6-28-S	425.00	1000	3000	28	67⅝	16⅜	59½	1-4"	2-4"	10	2400	6-28-S
4-31-S	450.00	1100	3300	31	59¾	16¼	51	1-4"	2-4"	10	2200	4-31-S
5-31-S	500.00	1275	3825	31	65	16¼	56¼	1-4"	2-4"	10	2450	5-31-S
6-31-S	525.00	1400	4200	31	70⅜	16¼	61⅝	1-4"	2-4"	10	2675	6-31-S
4-34-S	500.00	1300	3900	34	61½	17	52	1-5"	2-5"	11	2550	4-34-S
5-34-S	550.00	1500	4500	34	67	17	57½	1-5"	2-5"	11	2775	5-34-S
6-34-S	587.50	1650	4950	34	72⅝	17	63⅞	1-5"	2-5"	11	3100	6-34-S

See Note on Ratings and Guarantee, pages 7 and 8. Additional measurements, page 32.

Flow and return mains to be included in determining capacity of boiler required.

For amount of asbestos cement required to cover each size of boiler, see page 255.

SAFFORD ROUND STEAM BOILERS

Measurements are in Inches

No.	G	B	I	K	M	P	R	S	V	No.
4-19-S	$26\frac{5}{8}$	$52\frac{1}{2}$	$14\frac{3}{4}$	$8\frac{1}{2} \times 11\frac{3}{4}$	$45\frac{1}{2}$	8	$59\frac{5}{8}$	$15\frac{7}{8}$	$24\frac{1}{8}$	4-19-S
5-19-S	$26\frac{5}{8}$	57	$14\frac{3}{4}$	$8\frac{1}{2} \times 11\frac{3}{4}$	50	8	$64\frac{1}{8}$	$15\frac{7}{8}$	$24\frac{1}{8}$	5-19-S
6-19-S	$26\frac{5}{8}$	$61\frac{5}{8}$	$14\frac{3}{4}$	$8\frac{1}{2} \times 11\frac{3}{4}$	$54\frac{5}{8}$	8	$68\frac{3}{4}$	$15\frac{7}{8}$	$24\frac{1}{8}$	6-19-S
4-22-S	$30\frac{1}{4}$	54	$15\frac{3}{4}$	9 $\times 13\frac{1}{4}$	47	9	$62\frac{1}{4}$	$16\frac{3}{4}$	$27\frac{17}{32}$	4-22-S
5-22-S	$30\frac{1}{4}$	$58\frac{1}{2}$	$15\frac{3}{4}$	9 $\times 13\frac{1}{4}$	$51\frac{1}{2}$	9	$66\frac{3}{4}$	$16\frac{3}{4}$	$27\frac{17}{32}$	5-22-S
6-22-S	$30\frac{1}{4}$	$63\frac{1}{4}$	$15\frac{3}{4}$	9 $\times 13\frac{1}{4}$	$56\frac{1}{4}$	9	$71\frac{1}{2}$	$16\frac{3}{4}$	$27\frac{17}{32}$	6-22-S
4-25-S	$32\frac{15}{16}$	$55\frac{5}{8}$	$16\frac{1}{4}$	9 $\times 13\frac{1}{4}$	$47\frac{7}{8}$	9	$63\frac{3}{8}$	$17\frac{1}{2}$	$30\frac{1}{8}$	4-25-S
5-25-S	$32\frac{15}{16}$	$60\frac{1}{4}$	$16\frac{1}{4}$	9 $\times 13\frac{1}{4}$	$52\frac{1}{2}$	9	68	$17\frac{1}{2}$	$30\frac{1}{8}$	5-25-S
6-25-S	$32\frac{15}{16}$	$65\frac{3}{8}$	$16\frac{1}{4}$	9 $\times 13\frac{1}{4}$	$57\frac{5}{8}$	9	$73\frac{1}{8}$	$17\frac{1}{2}$	$30\frac{1}{8}$	6-25-S
4-28-S	$36\frac{15}{16}$	$57\frac{5}{8}$	$16\frac{3}{8}$	$9\frac{5}{8} \times 18$	$49\frac{1}{4}$	10	$66\frac{5}{8}$	$18\frac{5}{8}$	$34\frac{1}{16}$	4-28-S
5-28-S	$36\frac{15}{16}$	$62\frac{5}{8}$	$16\frac{3}{8}$	$9\frac{5}{8} \times 18$	$54\frac{1}{4}$	10	$71\frac{5}{8}$	$18\frac{5}{8}$	$34\frac{1}{16}$	5-28-S
6-28-S	$36\frac{15}{16}$	$67\frac{5}{8}$	$16\frac{3}{8}$	$9\frac{5}{8} \times 18$	$59\frac{1}{2}$	10	$76\frac{7}{8}$	$18\frac{5}{8}$	$34\frac{1}{16}$	6-28-S
4-31-S	$40\frac{3}{8}$	$59\frac{3}{4}$	$16\frac{1}{4}$	$9\frac{5}{8} \times 18$	51	10	$68\frac{5}{8}$	$19\frac{5}{16}$	$36\frac{7}{8}$	4-31-S
5-31-S	$40\frac{3}{8}$	65	$16\frac{1}{4}$	$9\frac{5}{8} \times 18$	$56\frac{1}{4}$	10	$73\frac{7}{8}$	$19\frac{5}{16}$	$36\frac{7}{8}$	5-31-S
6-31-S	$40\frac{3}{8}$	$70\frac{3}{8}$	$16\frac{1}{4}$	$9\frac{5}{8} \times 18$	$61\frac{5}{8}$	10	$79\frac{1}{4}$	$19\frac{5}{16}$	$36\frac{7}{8}$	6-31-S
4-34-S	$45\frac{3}{16}$	$61\frac{1}{2}$	17	$9\frac{5}{8} \times 18$	52	11	$71\frac{1}{4}$	$19\frac{13}{16}$	$39\frac{27}{32}$	4-34-S
5-34-S	$45\frac{3}{16}$	67	17	$9\frac{5}{8} \times 18$	$57\frac{1}{2}$	11	$76\frac{3}{4}$	$19\frac{13}{16}$	$39\frac{27}{32}$	5-34-S
6-34-S	$45\frac{3}{16}$	$72\frac{5}{8}$	17	$9\frac{5}{8} \times 18$	$63\frac{1}{8}$	11	$82\frac{3}{8}$	$19\frac{13}{16}$	$39\frac{27}{32}$	6-34-S

Safford Round Steam Boilers are so designed that any casting, whether round or square, may be taken through any door or opening which is not less than 2 feet 6 inches wide.

**THE
SAFFORD
SQUARE-POT
STEAM AND HOT-WATER BOILERS**

**MADE IN TWENTY-THREE SIZES, IN BOTH STEAM AND HOT-WATER
IN STEAM, VARYING FROM 800 SQUARE FEET TO 5,200 SQUARE FEET
IN WATER, FROM 1,300 SQUARE FEET TO 8,575 SQUARE FEET**

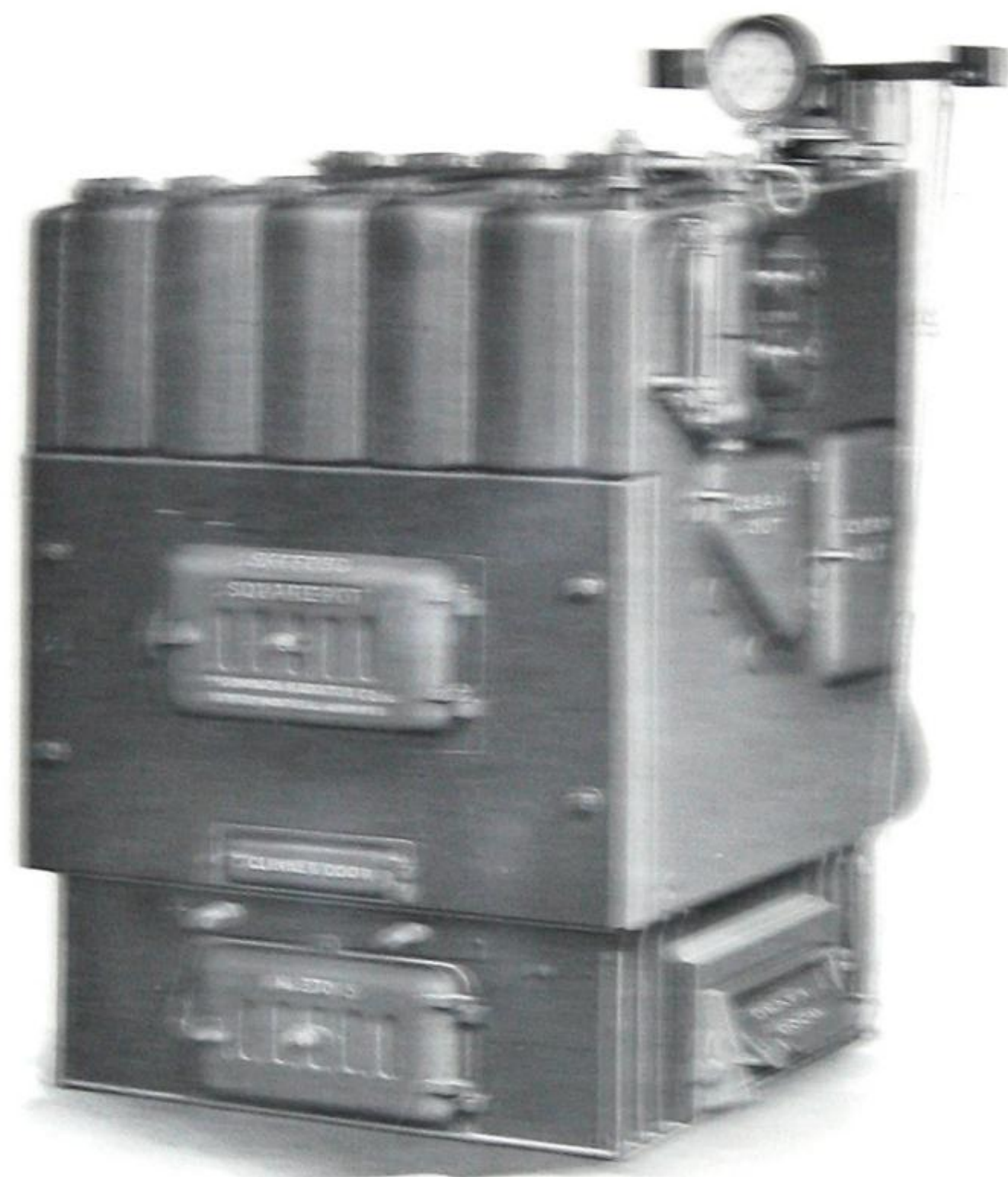
Information required for ordering Boilers and Boiler Repairs, see page 116

**THE
MANUFACTURED BY**

DOMINION RADIATOR COMPANY
LIMITED

St. John Montreal Hamilton TORONTO Winnipeg Calgary Vancouver

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS

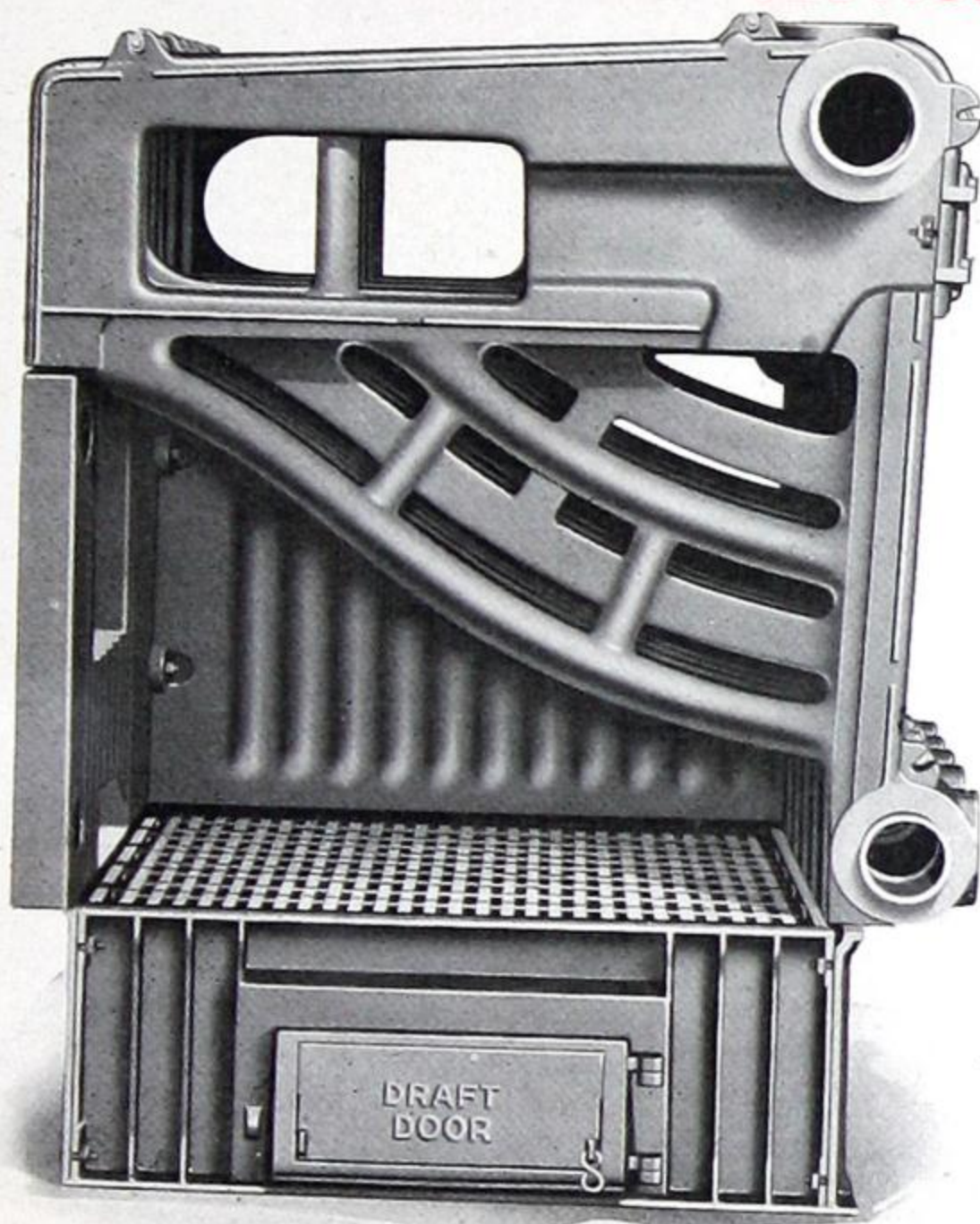


GENERAL VIEW SQUARE-POT STEAM BOILER
Boilers starting with 370-7 and up, have Two Fire Doors,
see page 42

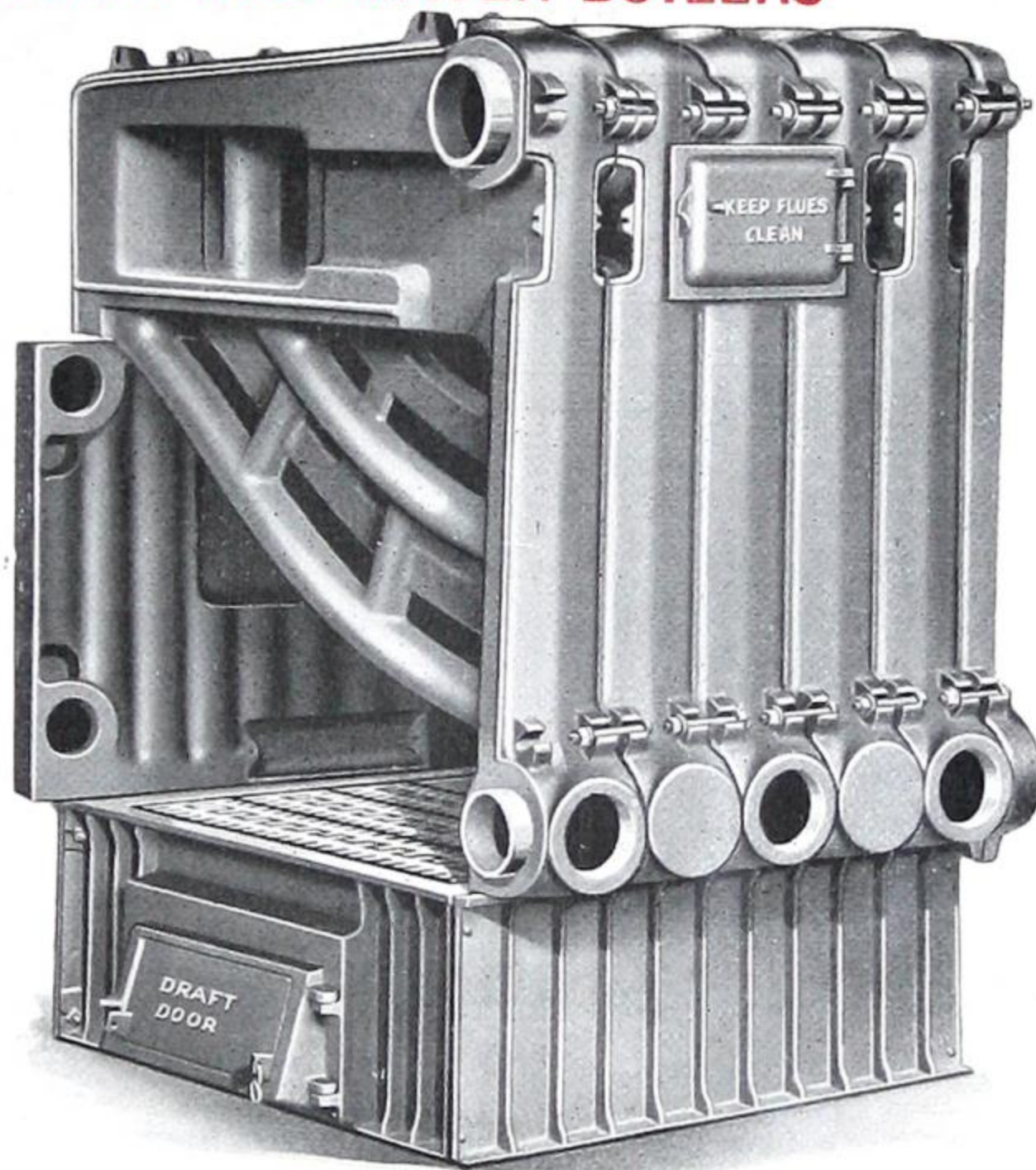


GENERAL VIEW SQUARE-POT WATER BOILER
General View showing Double Fire Door, Square-Pot Boiler,
see page 42

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS



View showing Internal Waterways, all tending upward toward the front



View showing Clean-out Doors and method of connecting sections

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS**SAFFORD SQUARE-POT SECTIONAL STEAM BOILER**

For Hard or Soft Coal, Wood or Natural Gas

LIST PRICES AND DATA

Information Required for Ordering Boilers and Boiler Repairs, see page 116

No.	List Price	Capacity Square Feet Direct Cast Radiation	Capacity 1 in. Pipe Lin. Ft.	Height to Top of Outlet	Size of Grate	Area Sq. Ft.	Height Water Line	Size of Flow and Return inches	"A" Dimension See page 38	Size Smoke Pipe	No.
S-370-3	\$ 375.00	800	2400	59½	37 x 20	5.14	49½	1-4	22	9	S-370-3
S-371-3	425.00	1000	3000	59½	37 x 23	5.91	49½	1-4	26	9	S-371-3
S-370-4	475.00	1200	3600	59½	37 x 26	6.68	49½	2-4	29	10	S-370-4
S-371-4	525.00	1400	4200	59½	37 x 30	7.70	49½	2-4	33	10	S-371-4
S-370-5	575.00	1600	4800	59½	37 x 33	8.48	49½	2-4	36	10	S-370-5
S-371-5	625.00	1800	5400	59½	37 x 36	9.25	49½	2-4	39	10	S-371-5
S-370-6	675.00	2000	6000	59½	37 x 39	10.00	49½	2-4	42	12	S-370-6
S-371-6	725.00	2200	6600	59½	37 x 43	12.04	49½	3-4	46	12	S-371-6
S-370-7	775.00	2400	7200	59½	37 x 46	11.82	49½	3-4	49	12	S-370-7
S-371-7	825.00	2600	7800	59½	37 x 49	12.59	49½	3-4	52	12	S-371-7
S-370-8	875.00	2800	8400	59½	37 x 52	13.36	49½	3-4	55	12	S-370-8
S-371-8	925.00	3000	9000	59½	37 x 55	14.13	49½	3-4	58	12	S-371-8
S-370-9	975.00	3200	9600	59½	37 x 59	15.16	49½	3-4	62	12	S-370-9
S-371-9	1,025.00	3400	10200	59½	37 x 62	15.93	49½	3-4	65	12	S-371-9
S-370-10	1,075.00	3600	10800	59½	37 x 65	16.70	49½	4-4	68	12	S-370-10
S-371-10	1,125.00	3800	11400	59½	37 x 69	17.73	49½	4-4	72	12	S-371-10
S-370-11	1,175.00	4000	12000	59½	37 x 71	18.25	49½	4-4	75	14	S-370-11
S-371-11	1,225.00	4200	12600	59½	37 x 75	19.27	49½	4-4	78	14	S-371-11
S-370-12	1,275.00	4400	13200	59½	37 x 78	20.04	49½	4-4	81	14	S-370-12
S-371-12	1,325.00	4600	13800	59½	37 x 81	20.81	49½	4-4	84	14	S-371-12
S-370-13	1,375.00	4800	14400	59½	37 x 84	21.58	49½	4-4	87	14	S-370-13
S-371-13	1,425.00	5000	15000	59½	37 x 88	22.61	49½	5-4	91	14	S-371-13
S-370-14	1,475.00	5200	15600	59½	37 x 91	23.38	49½	5-4	94	14	S-370-14

See Note on Ratings, Guarantee and Coverings, pages 7 and 8.

Names and list prices of repair parts, see pages 39 to 46.

Flow and return mains to be included in determining capacity of boiler required.

For amount of asbestos cement required to cover each size of boiler, see page 256.

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS**SAFFORD SQUARE-POT HOT WATER BOILER**

For Hard or Soft Coal, Wood or Natural Gas

LIST PRICES AND DATA

Information required for Ordering Boilers and Boiler Repairs, see page 116

Number	List Price	Capacity Sq. Feet DirectCast Radiation	Capacity Lineal Feet 1 in. Pipe	Height to top of Outlet	Size of Grate Inches	Area Sq. Ft.	Size of Flows and Returns Inches	"A" Dimension See page 38	Size of Smoke Pipe Required	Number
370- 3	\$ 350.00	1300	3900	59½	37 x 20	5.14	1-4	22	9	370- 3
371- 3	400.00	1650	4950	59½	37 x 23	5.91	1-4	26	9	371- 3
370- 4	450.00	2000	6000	59½	37 x 26	6.68	2-4	29	10	370- 4
371- 4	500.00	2325	6975	59½	37 x 30	7.70	2-4	33	10	371- 4
370- 5	550.00	2650	7950	59½	37 x 33	8.48	2-4	36	10	370- 5
371- 5	600.00	2975	8925	59½	37 x 36	9.25	2-4	39	10	371- 5
370- 6	650.00	3300	9900	59½	37 x 39	10.00	2-4	42	12	370- 6
371- 6	700.00	3625	10875	59½	37 x 43	11.04	2-4	46	12	371- 6
370- 7	750.00	3950	11850	59½	37 x 46	11.82	2-4	49	12	370- 7
371- 7	787.50	4300	12900	59½	37 x 49	12.59	2-4	52	12	371- 7
370- 8	837.50	4625	13875	59½	37 x 52	13.36	2-4	55	12	370- 8
371- 8	887.50	4950	14850	59½	37 x 55	14.13	2-4	58	12	371- 8
370- 9	937.50	5275	15825	59½	37 x 59	15.16	2-4	62	12	370- 9
371- 9	987.50	5600	16800	59½	37 x 62	15.93	2-4	65	12	371- 9
370-10	1,037.50	5950	17850	59½	37 x 65	16.70	3-4	68	12	370-10
371-10	1,087.50	6275	18825	59½	37 x 69	17.73	3-4	72	12	371-10
370-11	1,137.50	6600	19800	59½	37 x 71	18.25	3-4	75	14	370-11
371-11	1,187.50	6925	20775	59½	37 x 75	19.27	3-4	78	14	371-11
370-12	1,212.50	7250	21750	59½	37 x 78	20.04	3-4	81	14	370-12
371-12	1,262.50	7600	22800	59½	37 x 81	20.81	3-4	84	14	371-12
370-13	1,312.50	7925	23775	59½	37 x 84	21.58	3-4	87	14	370-13
371-13	1,362.50	8250	24750	59½	37 x 88	22.61	3-4	91	14	371-13
370-14	1,412.50	8575	25725	59½	37 x 91	23.38	3-4	94	14	370-14

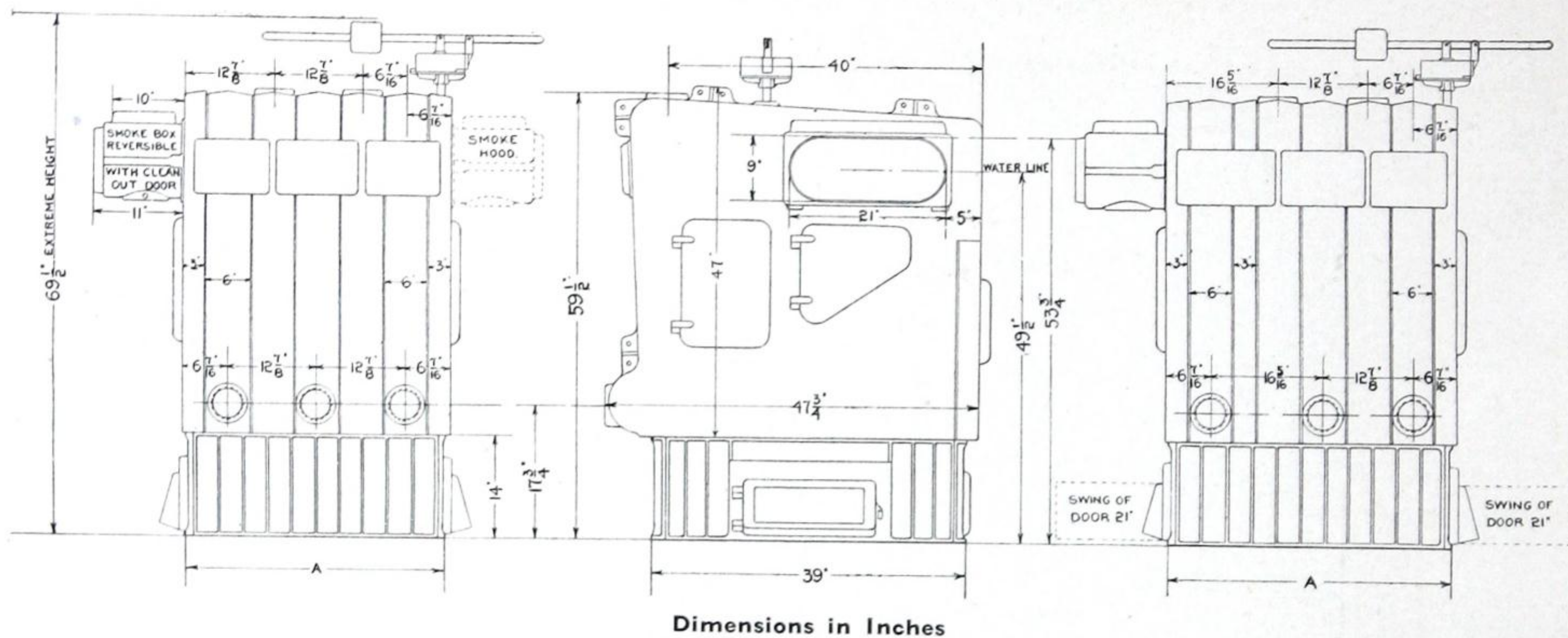
See Note on Ratings, Guarantee and Coverings, pages 7 and 8.

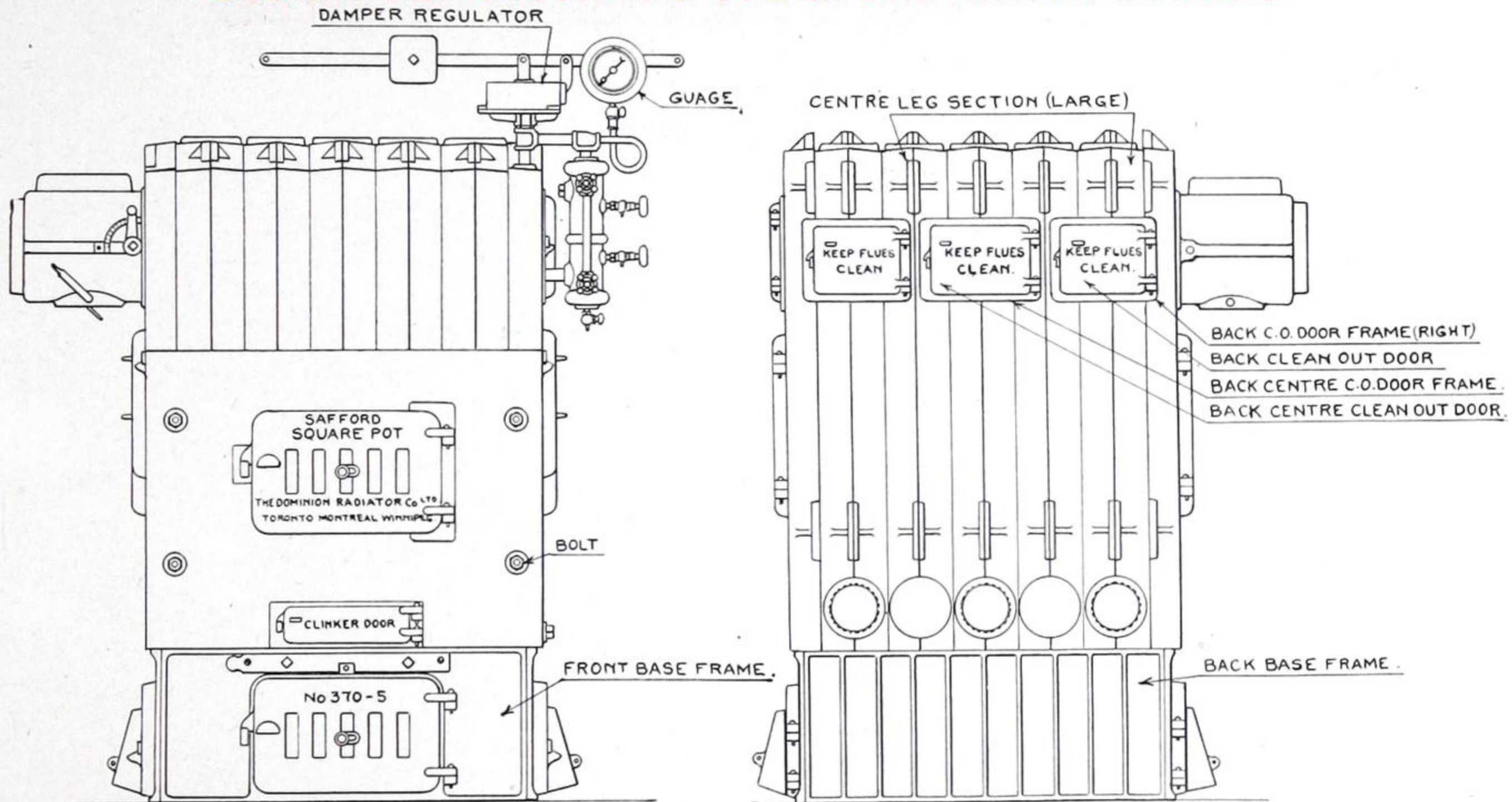
Names and list prices of repair parts, see pages 39 to 46.

Flow and return mains to be included in determining capacity of boiler required.

For amount of asbestos cement required to cover each size of boiler, see page 256.

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS

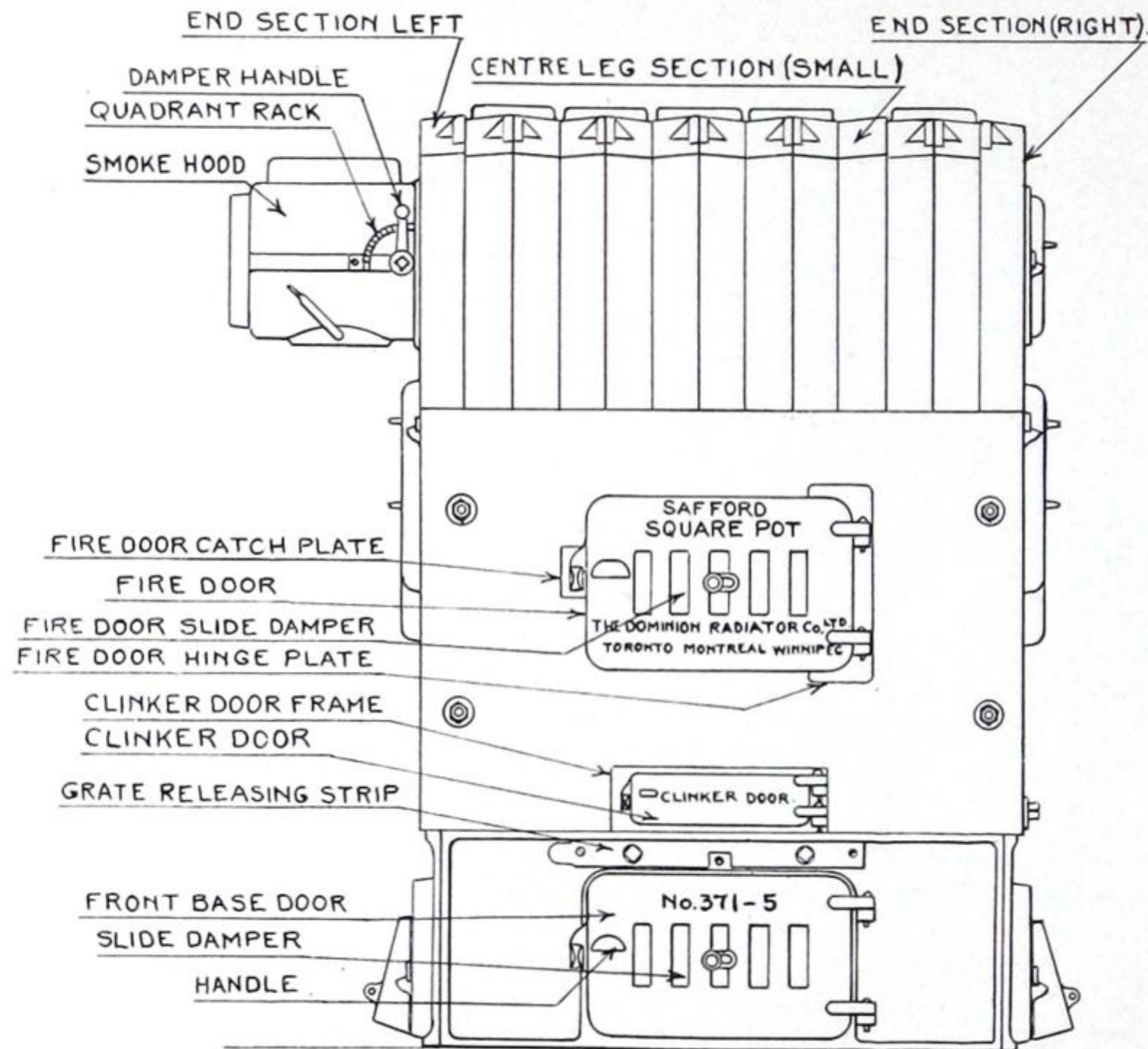


SQUARE-POT SECTIONAL STEAM AND WATER BOILERS

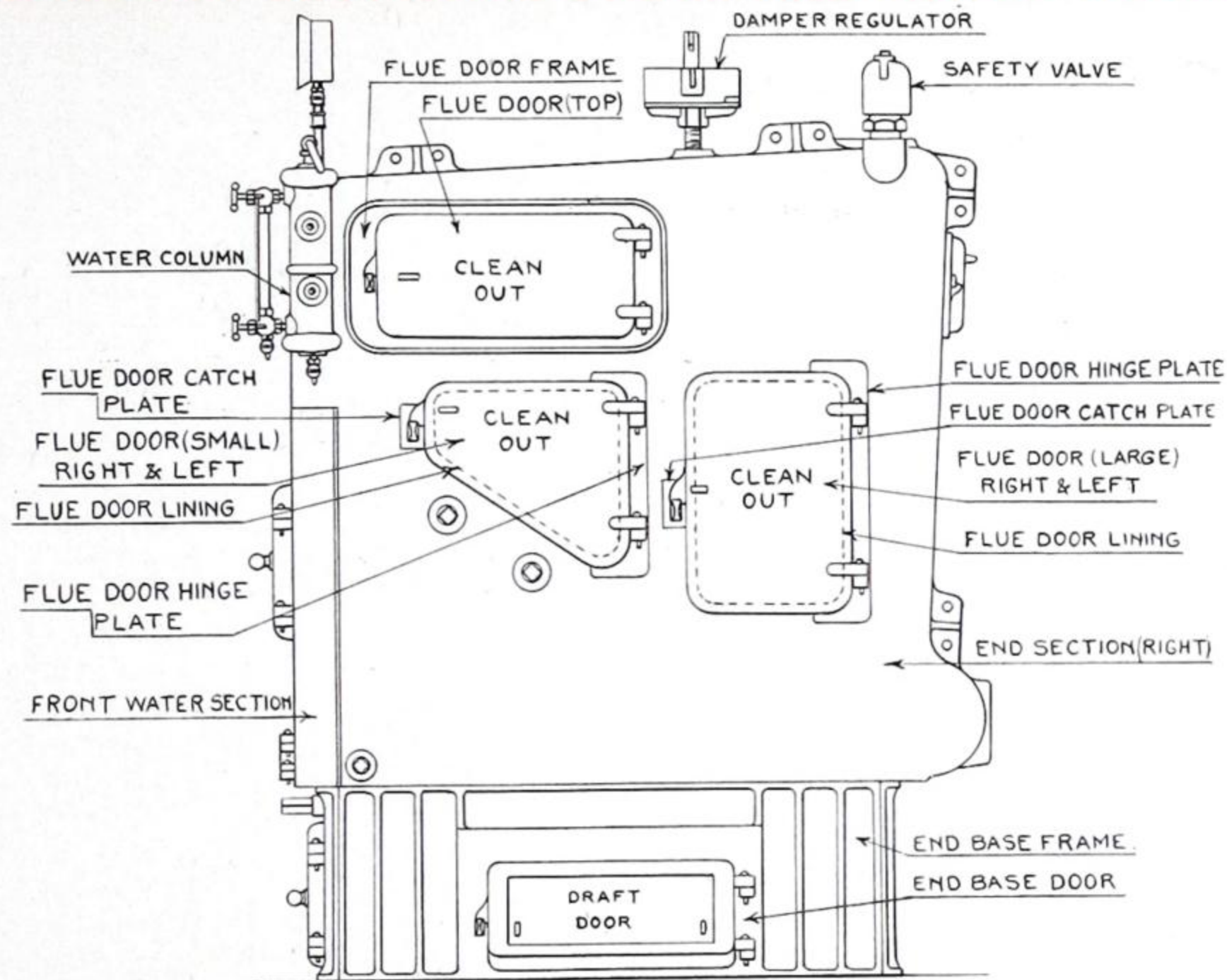
The above illustrations give the names of repair parts.

For list prices of repair parts, see pages 39 to 46.

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS



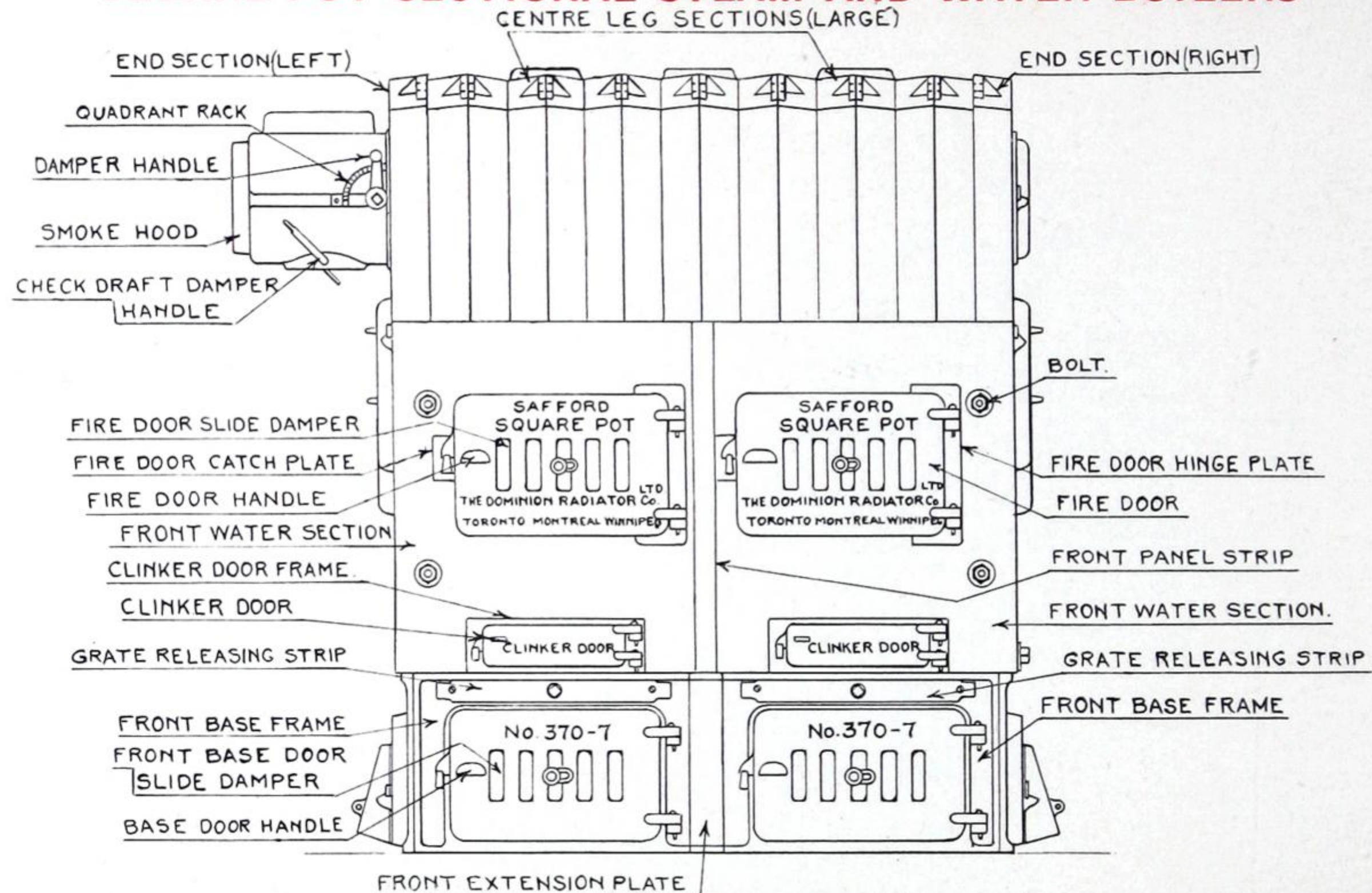
The above illustrations give the names of repair parts. For list prices of repair parts see pages 39 to 46.

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS

The above illustrations give the names of repair parts.

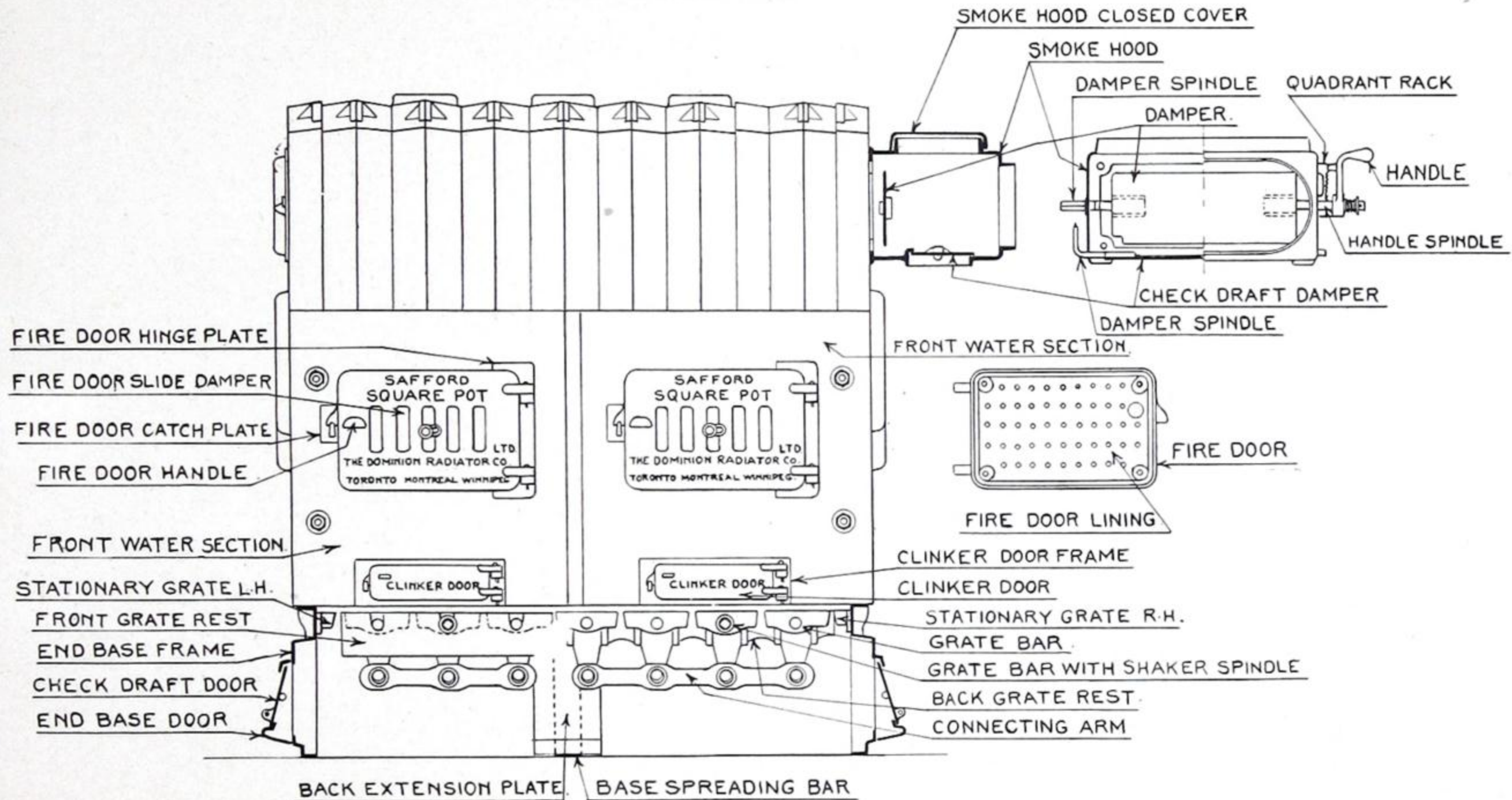
For list prices of repair parts, see pages 39 to 46.

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS

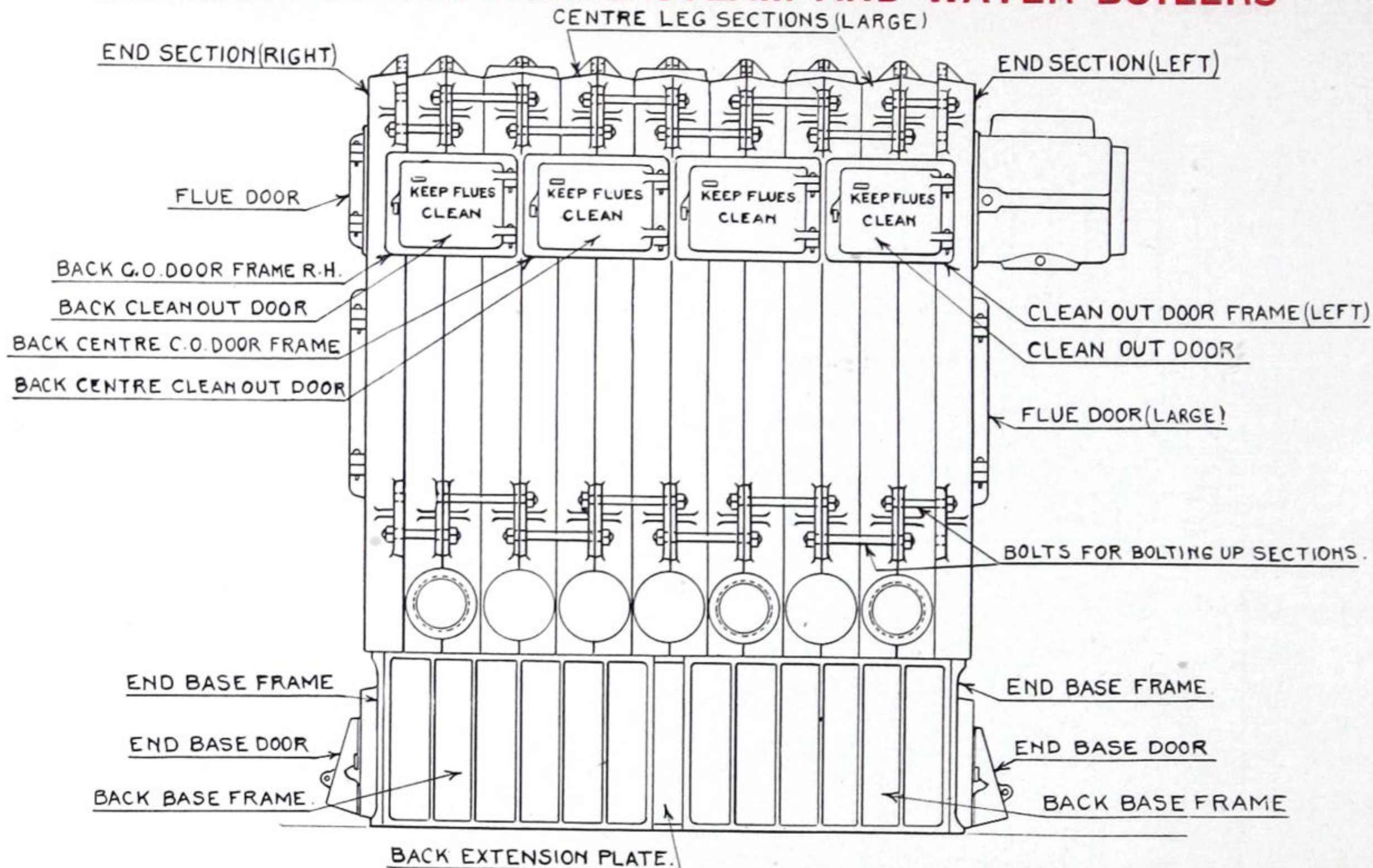


The above illustrations give the names of repair parts.

For list prices of repair parts, see pages 39 to 46.

SQUARE-POT SECTIONAL STEAM AND WATER BOILERS

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SQUARE-POT SECTIONAL STEAM AND WATER BOILERS

The above illustrations give the names of repair parts.

For list prices of repair parts, see pages 39 to 46.

SQUARE-POT SECTIONAL STEAM BOILERS

NAMES AND LIST PRICE OF REPAIR PARTS FOR SQUARE-POT BOILERS

Pattern No.	Name of Part	Price	Pattern No.	Name of Part	Price
B-1-37-15	Back Base Frame, No. 7.....	\$11.80	B-29-37-15	2 Sect. Right Hand Clean-Out Door Frame, No. 1½.....	\$ 1.10
B-2-37-15	Front Base Frame, No. 7.....	7.80	B-30-37-15	2 Sect. Right Hand Clean-Out Door, No. 1½.....	.80
B-3-37-15	End Base Frame.....	10.00	B-31-37-15	2 Sect. Left Hand Clean-out Door, No. 1½.....	.80
B-4-37-15	End Base Door.....	1.60	B-32-37-15	Large Flue Door Hinge Plate.....	1.00
B-5-37-15	Check Draft Door.....	1.10	B-33-37-15	Small Flue Door Hinge Plate.....	1.00
B-6-37-15	Front Base Door.....	1.80	B-34-37-15	Fire Door Hinge Plate.....	.90
B-7-37-15	Catch Plate for Flue Door, R. & L.....	.60	B-35-37-15	Catch Plates for Fire Door, R. & L.....	.25
B-8-37-15	Back Grate Rest, No. 4.....	4.60	B-36-37-15	Top Flue Door Frame.....	1.50
B-9-37-15	Front Grate Rest, No. 4.....	3.50	B-37-37-15	Top Flue Door.....	2.00
B-10-37-15	Grate Releasing Strip, No. 6.....	1.50	B-38-37-15	Smoke Hood.....	9.00
B-11-37-15	Grate Bar.....	8.65	B-39-37-15	Smoke Hood, Closed Cover.....	2.40
B-11½-37-15	Grate Connecting Lug.....	.50	B-40-37-15	Smoke Hood, Damper.....	2.60
B-12-37-15	Grate Bar, with Shaker Spindle.....	9.00	B-41-37-15	Check Draft Damper Spindle.....	.20
B-13-37-15	Shaker Handle.....	2.30	B-42-37-15	Check Draft Damper.....	2.40
B-14-37-15	Clinker Door Frame.....	1.10	B-43-37-15	Check Draft R. H. Damper Spindle.....	.20
B-15-37-15	Clinker Door.....	.60	B-44-37-15	Check Draft L. H. Damper Spindle.....	.20
B-16-37-15	Large Fire Door, 20 inch.....	3.20	B-45-37-15	Door Handles.....	.25
B-16½-37-15	Small Fire Door, 16 inch.....	2.20	E-B-46	Smoke-Hood Damper Quadrant, Ratchet Rack	.20
B-17-37-15	Large Fire Door Lining.....	2.30	B-47-37-15	Smoke-Hood Damper Quadrant Ratchet Handle.....	40
B-18-37-15	Fire Door and Ash Door Slide Damper.....	.60	B-48-37-15	Back Base Frame No. 1.....	6.10
B-19-37-15	Large Right End Flue Door.....	2.50	B-49-37-15	Front Base Extension Plate.....	1.40
B-20-37-15	Large Left End Flue Door.....	2.50	B-50-37-15	Back Base Extension Plate.....	1.40
B-21-37-15	Large Flue Door Lining.....	1.60	B-51-37-15	Boiler Section Right End.....	80.00
B-22-37-15	Small Right End Flue Door.....	2.00	B-52-37-15	Boiler Section, Left End.....	80.00
B-23-37-15	Small Left End Flue Door.....	2.00	B-53-37-15	Boiler Section, large Centre Leg.....	75.00
B-24-37-15	Small Right End Flue Door Lining.....	1.40	B-54-37-15	Front Water Section.....	51.00
B-25-37-15	Small Left End Flue Door Lining.....	1.40	B-55-37-15	Front Section, Small Centre Leg.....	58.00
B-26-37-15	3 Sect. Large Centre Clean-out Door Frame..	1.50	B-56-37-15	Base Spreading Bar.....	4.30
B-27-37-15	3 Sect. Large Centre Clean-out Door.....	1.80	B-57-37-15	Front Base, Frame No. 5.....	6.20
B-28-37-15	2 Sect. Right Hand Clean-out Door Frame, No. 1½.....	1.10			

SQUARE-POT SECTIONAL STEAM BOILERS

NAMES AND LIST PRICE OF REPAIR PARTS FOR SQUARE-POT BOILERS

Pattern No.	Name of Part	Price	Pattern No.	Name of Part	Price
B-58-37-15	Back Base Frame, No. 5.....	\$10.00	B-88-37-15	No. 6 Front Grate Rest.....	\$5.00
B-59-37-15	Front Grate Rest, No. 3.....	3.00	B-89-37-15	No. 7 Front Grate Rest.....	6.20
B-60-37-15	Back Grate Rest, No. 3.....	3.90	B-90-37-15	No. 8 Front Grate Rest.....	7.60
B-61-37-15	Grate Releasing Strip No. 7.....	1.60	B-91-37-15	No. 1 Back Grate Rest.....	2.40
B-62-37-15	Fire Door Lining (small).....	1.80	B-92-37-15	No. 2 Back Grate Rest.....	3.60
B-63-37-15	3 Sec. (small) Back Clean-out Door-Frame....	1.50	B-93-37-15	No. 5 Back Grate Rest.....	5.20
B-64-37-15	3 Sec. Back Clean-out Door.....	1.20	B-94-37-15	No. 6 Back Grate Rest.....	6.20
B-65-37-15	No. 1 Front Base Frame.....	4.70	B-95-37-15	No. 7 Back Grate Rest.....	7.20
B-66-37-15	No. 2 Front Base Frame.....	4.10	B-96-37-15	No. 8 Back Grate Rest.....	8.40
B-67-37-15	No. 2 Back Base.....	6.80	B-97-37-15	Front Panel Strip.....	2.00
B-68-37-15	Pivot Bearing for Base Butterfly Door.....	.10	B-98-37-15	Stationary Grate or Coal Guard.....	4.00
B-69-37-15	No. 1 Front Water Section.....	31.00	B-111-37-15	2 Sec. Back Centre Clean-out Door, No. 2....	.90
B-70-37-15	No. 2 Front Water Section.....	35.00	B-112-37-15	2 Sec. Back Centre Clean-out Door Frame....	1.00
B-71-37-15	No. 3 Front Water Section.....	41.00	B-113-37-15	Alignment Plate for Double Sec. Front.....	.25
B-72-37-15	No. 4 Front Water Section.....	45.00	B-114-37-15	Back Base Frame, No. 4.....	9.20
B-73-37-15	No. 5 Front Water Section.....	47.00	B-115-37-15	Front Base Frame No. 4.....	6.00
B-74-37-15	No. 6 Front Water Section.....	50.00	B-116-37-15	Back Base Frame, No. 3.....	8.00
B-75-37-15	No. 7 Front Water Section.....	54.00	B-117-37-15	Front Base Frame, No. 3.....	5.20
B-76-37-15	Two-Hole Grate Conn. Arm.....	.60	B-118-37-15	Back Base Frame, No. 6.....	11.00
B-77-37-15	Three-Hole Grate Conn. Arm.....	.80	B-119-37-15	Front Base Frame, No. 6.....	7.00
B-78-37-15	Four-Hole Grate Conn. Arm.....	1.20	B-120-37-15	Back Base Frame, No. 8.....	13.00
B-79-37-15	No. 1 Grate Releasing Strip.....	1.20	B-121-37-15	Front Base Frame, No. 8.....	9.00
B-80-37-15	No. 2 Grate Releasing Strip.....	1.40	No number...	2½" Nipple.....	.25
B-81-37-15	No. 3 Grate Releasing Strip.....	1.40	" "	4" Nipple.....	.40
B-82-37-15	No. 4 Grate Releasing Strip.....	1.20	" "	5" Nipple.....	.50
B-83-37-15	No. 5 Grate Releasing Strip.....	1.40	" "	Name Plate (Square Pot).....	.20
B-84-37-15	No. 8 Grate Releasing Strip.....	1.60	" "	Name Plate (Steam Boiler).....	.20
B-85-37-15	No. 1 Front Grate Rest.....	1.80	" "	Name Plate (Boiler No. Plate).....	.20
B-86-37-15	No. 2 Front Grate Rest.....	2.50	" "	Name Plate, Location Name Plate.....	.25
B-87-37-15	No. 5 Front Grate Rest.....	3.90			

**THE
SAFFORD MAGAZINE
SELF-FEED
DOWN DRAFT
BOILERS**

MADE IN TWENTY-TWO SIZES, BOTH STEAM AND HOT-WATER
IN STEAM, VARYING FROM 500 SQUARE FEET TO 8,250 SQUARE FEET
IN WATER, FROM 850 SQUARE FEET TO 13,750 SQUARE FEET

Information required for ordering Boilers and Boiler Repairs, see page 116.

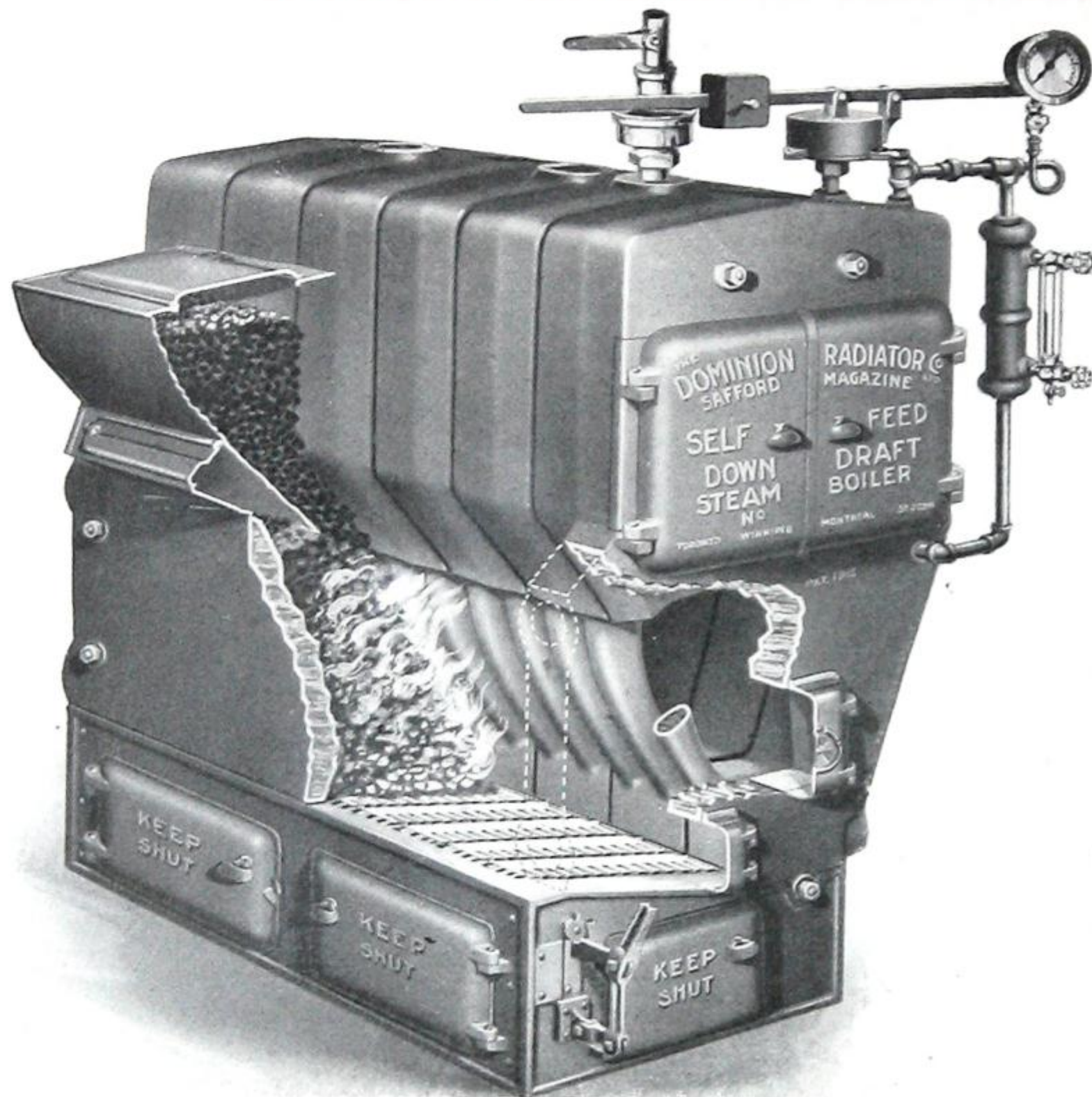
THE

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DOMINION RADIATOR COMPANY
LIMITED

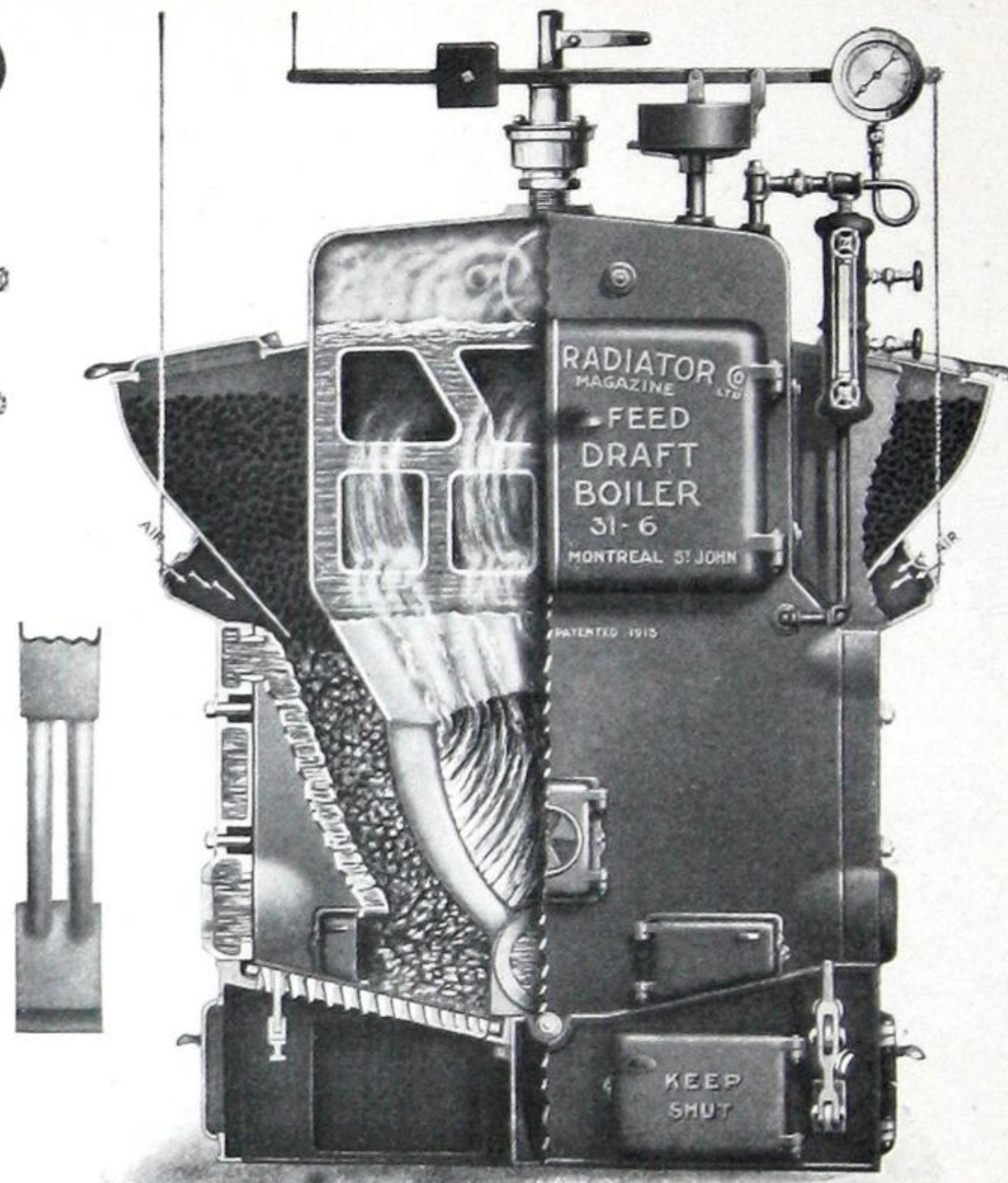
St. John Montreal Hamilton **TORONTO** Winnipeg Calgary Vancouver

SAFFORD MAGAZINE SELF-FEED DOWN DRAFT BOILERS



General view of 26 inch Safford Magazine Self-Feed Down Draft Steam Boiler.

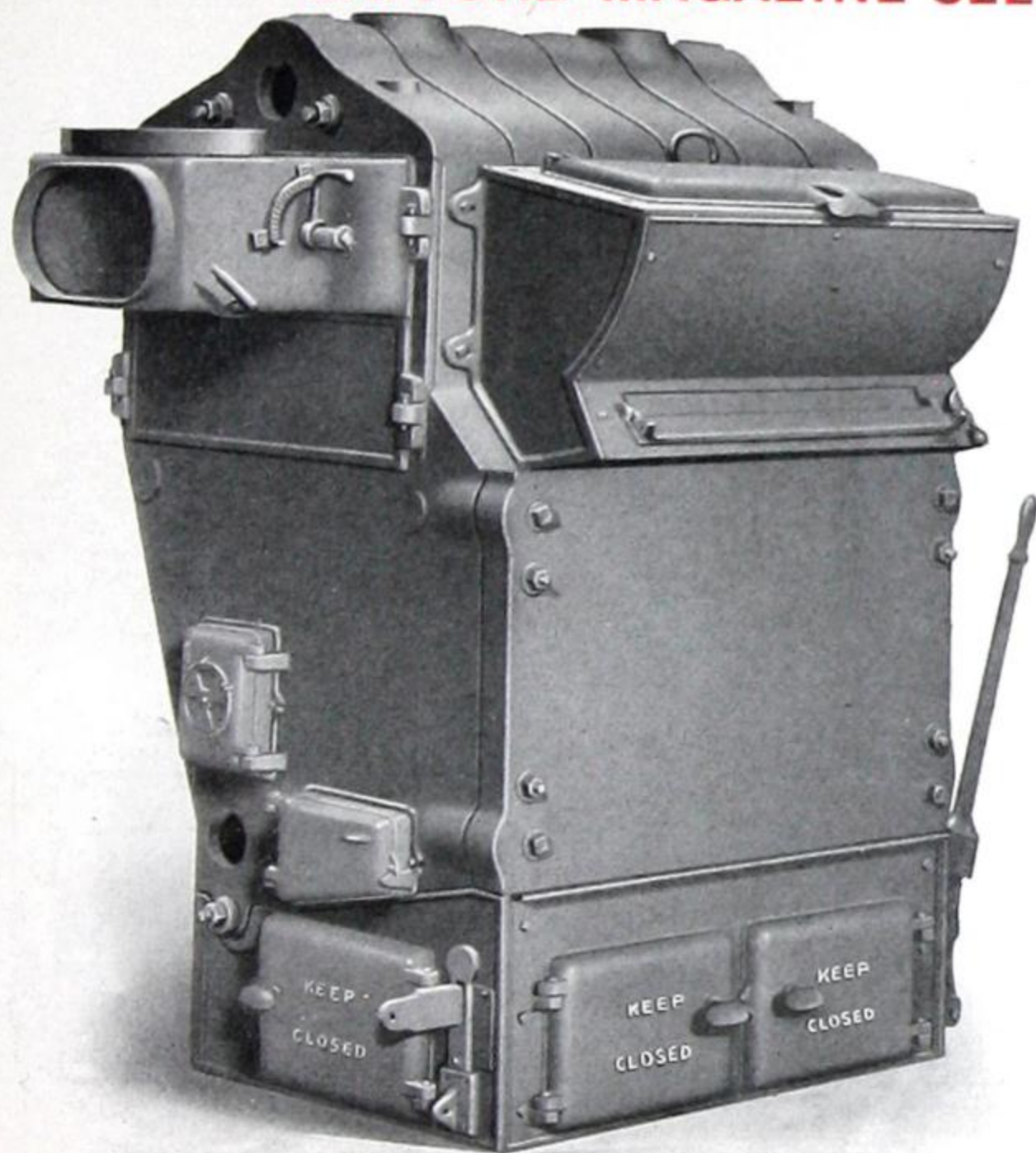
Smoke pipe may be taken off either end.



General view of 31 inch and 47 inch Safford Magazine Self-Feed Down Draft Steam Boiler.

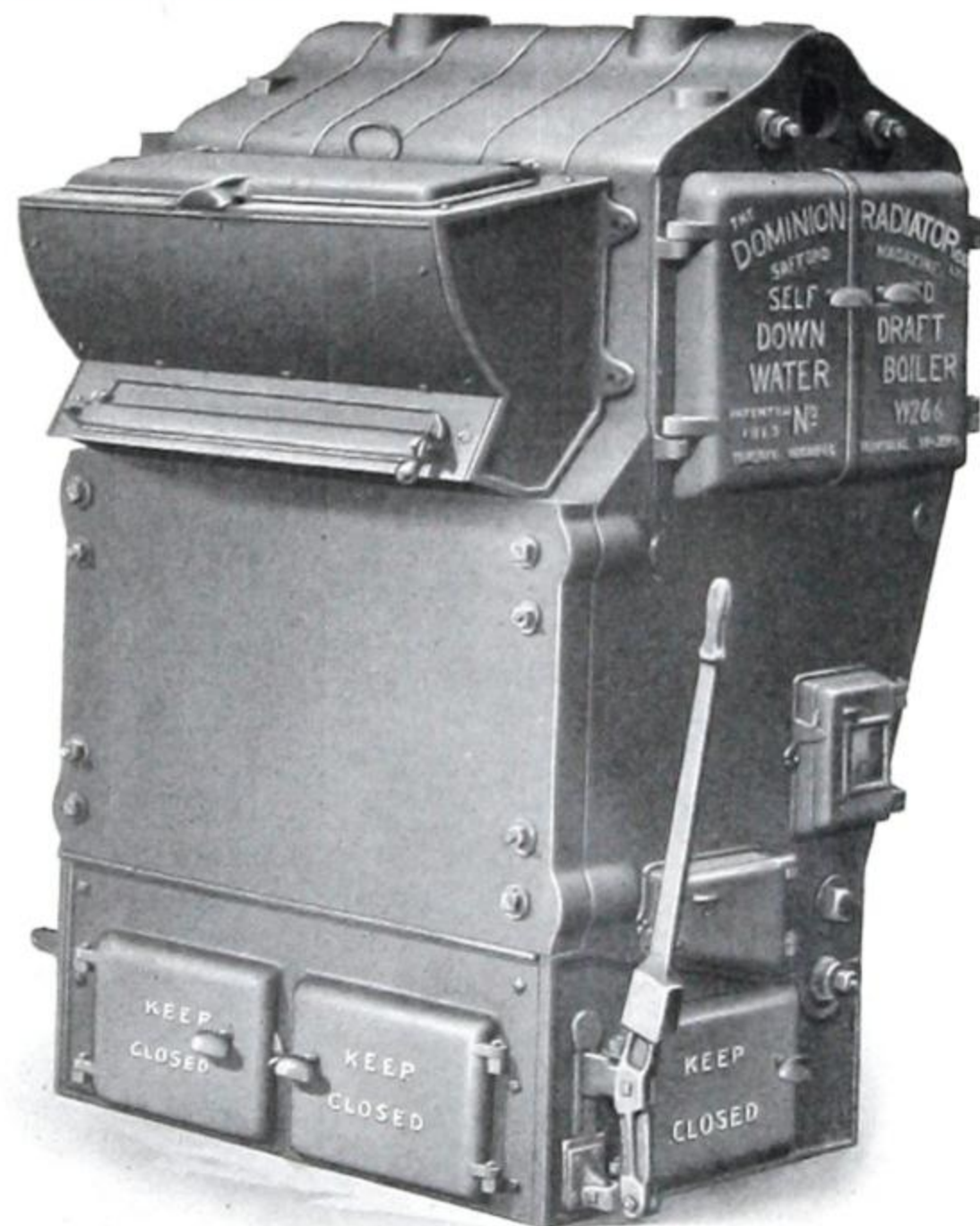
For list prices, dimensions and capacities, see pages 50 to 53.

SAFFORD MAGAZINE SELF-FEED DOWN DRAFT BOILERS



General view of 26 inch Safford Magazine Self-Feed Down Draft Water Boiler, showing rear and side.

Smoke pipe may be taken off either end.



General view of 26 inch Safford Magazine Self-Feed Down Draft Water Boiler, showing front and side.

For list prices, dimensions and capacities see pages 50 to 53.

THE SAFFORD MAGAZINE SELF-FEED DOWN DRAFT BOILERS

STEAM—List Prices and Data

26 inch SERIES

No.	List Price	Capacity Sq. Ft.	Capacity 1" Pipe Lin. Ft.	Height to Top Outlet	Width	Length	Water Line	Size Chimney	Outlets and Inlets	No.
S-26-3	\$ 275.00	500	1500	61	40	18	53	8	1-3	S-26-3
S-26-4	350.00	750	2250	61	40	24	53	9	1-3	S-26-4
S-26-5	425.00	1000	3000	61	40	30	53	9	2-3	S-26-5
S-26-6	487.50	1250	3750	61	40	36	53	10	2-3	S-26-6
S-26-7	550.00	1500	4500	61	40	42	53	12	3-3	S-26-7
S-26-8	612.50	1750	5250	61	40	48	53	12	3-3	S-26-8
S-26-9	675.00	2000	6000	61	40	54	53	12	3-3	S-26-9

31 inch SERIES

S-31-5	625.00	1800	5400	62	58	30	54	12	2-4	S-31-5
S-31-6	737.50	2250	6750	62	58	36	54	12	2-4	S-31-6
S-31-7	850.00	2700	8100	62	58	42	54	14	3-4	S-31-7
S-31-8	962.50	3150	9450	62	58	48	54	14	3-4	S-31-8
S-31-9	1,075.00	3600	10800	62	58	54	54	15	3-4	S-31-9
S-31-10	1,187.50	4050	12150	62	58	60	54	15	4-4	S-31-10
S-31-11	1,300.00	4500	13500	62	58	66	54	16	4-4	S-31-11

47 inch SERIES

S-47-5	925.00	3000	9000	78	75½	50½	61	14	2-5	S-47-5
S-47-6	1,112.50	3750	11250	78	75½	59	61	14	2-5	S-47-6
S-47-7	1,300.00	4500	13500	78	75½	67½	61	16	2-5	S-47-7
S-47-8	1,487.50	5250	15750	78	75½	76	61	18	3-5	S-47-8
S-47-9	1,675.00	6000	18000	78	75½	84½	61	18	3-5	S-47-9
S-47-10	1,862.50	6750	20250	78	75½	93	61	18	3-5	S-47-10
S-47-11	2,050.00	7500	22500	78	75½	101½	61	20	4-5	S-47-11
S-47-12	2,237.50	8250	24750	78	75½	110	61	20	4-5	S-47-12

See Note on Ratings, Guarantee and Coverings, pages 7 and 8.

Flow and return mains to be included in determining capacity of boiler required.

Length includes smoke box. Prices include full set of trimmings and fire tools.

Information required for ordering Boilers and Boiler repairs, see page 116

For amount of asbestos cement required to cover each size of boiler, see page 256.

Domestic coil openings furnished when required.

THE SAFFORD MAGAZINE SELF-FEED DOWN DRAFT BOILERS**HOT WATER—List Prices and Data**

26 inch SERIES

No.	List Price	Capacity Sq. Ft.	Capacity 1" Pipe Lin. Ft.	Height to Top Outlet	Width	Length	Size Chimney	Outlets and Inlets	No.
W-26-3	\$ 300.00	850	2550	61	40	18	8	1-3	W-26-3
W-26-4	325.00	1250	3750	61	40	24	9	1-3	W-26-4
W-26-5	400.00	1650	4950	61	40	30	9	2-3	W-26-5
W-26-6	462.50	2075	6225	61	40	36	10	2-3	W-26-6
W-26-7	525.00	2500	7500	61	40	42	12	3-3	W-26-7
W-26-8	587.50	2925	8775	61	40	48	12	3-3	W-26-8
W-26-9	650.00	3350	10050	61	40	54	12	3-3	W-26-9

31 inch SERIES

W-31-5	600.00	3000	9000	62	58	30	12	2-4	W-31-5
W-31-6	712.50	3750	11250	62	58	36	12	2-4	W-31-6
W-31-7	812.50	4500	13500	62	58	42	14	3-4	W-31-7
W-31-8	925.00	5250	15750	62	58	48	14	3-4	W-31-8
W-31-9	1,037.50	6000	18000	62	58	54	14	3-4	W-31-9
W-31-10	1,150.00	6750	20250	62	58	60	15	4-4	W-31-10
W-31-11	1,237.50	7500	22500	62	58	66	16	4-4	W-31-11

47 inch SERIES

W-47-5	887.50	5000	15000	78	75½	50½	14	2-5	W-47-5
W-47-6	1,075.00	6250	18750	78	75½	59	14	2-5	W-47-6
W-47-7	1,237.50	7500	22500	78	75½	67½	16	2-5	W-47-7
W-47-8	1,425.00	8750	26250	78	75½	76	18	3-5	W-47-8
W-47-9	1,612.50	10000	30000	78	75½	84½	18	3-5	W-47-9
W-47-10	1,800.00	11250	33750	78	75½	93	18	3-5	W-47-10
W-47-11	1,987.50	12500	37500	78	75½	101½	20	4-5	W-47-11
W-47-12	2,175.00	13750	41250	78	75½	110	20	4-5	W-47-12

See Note on Ratings, Guarantee and Coverings, pages 7 and 8.

Flow and return mains to be included in determining capacity of boiler required.

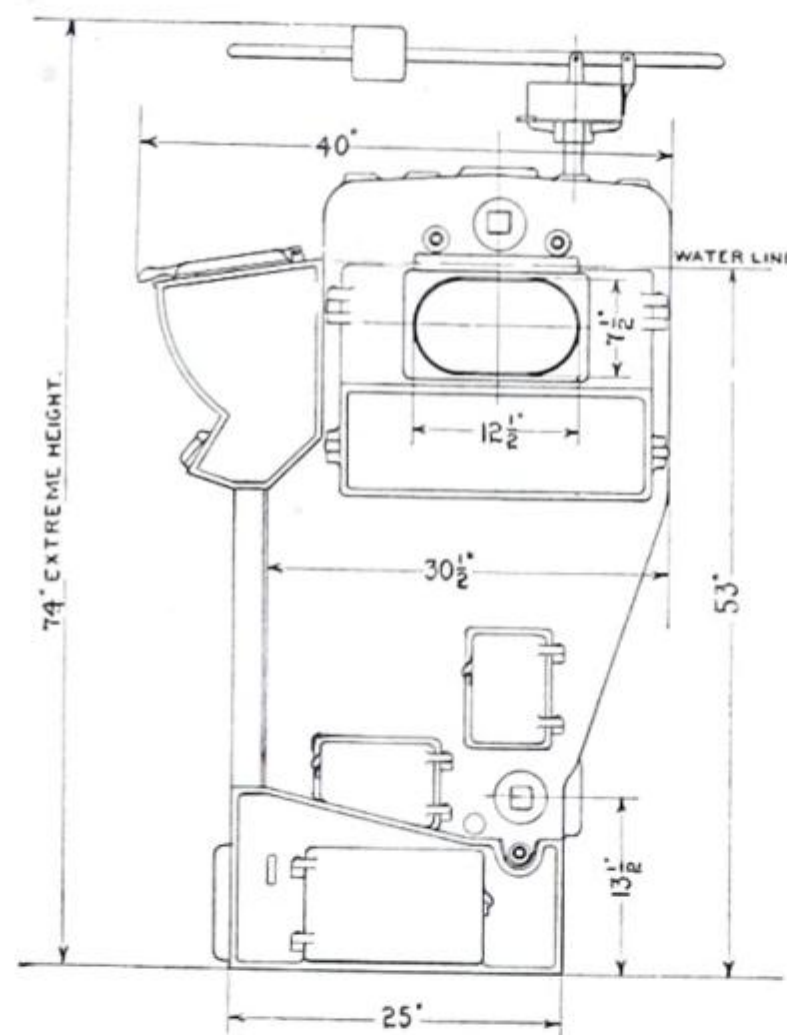
Length includes smoke box. Prices include full set of trimmings and fire tools.

Information required for ordering Boilers and Boiler repairs, see page 116.

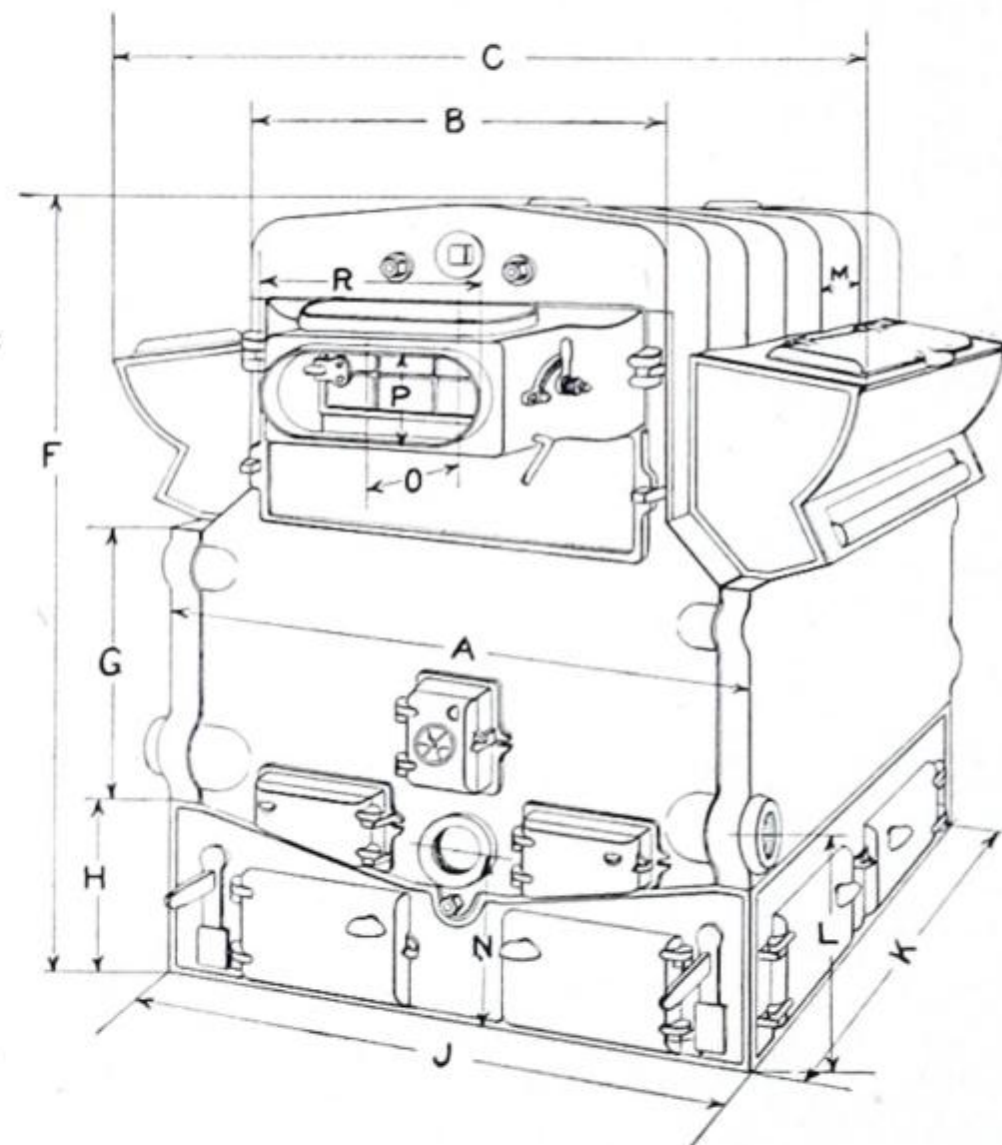
For amount of asbestos cement required to cover each size of boiler, see page 256.

Domestic coil openings furnished when required,

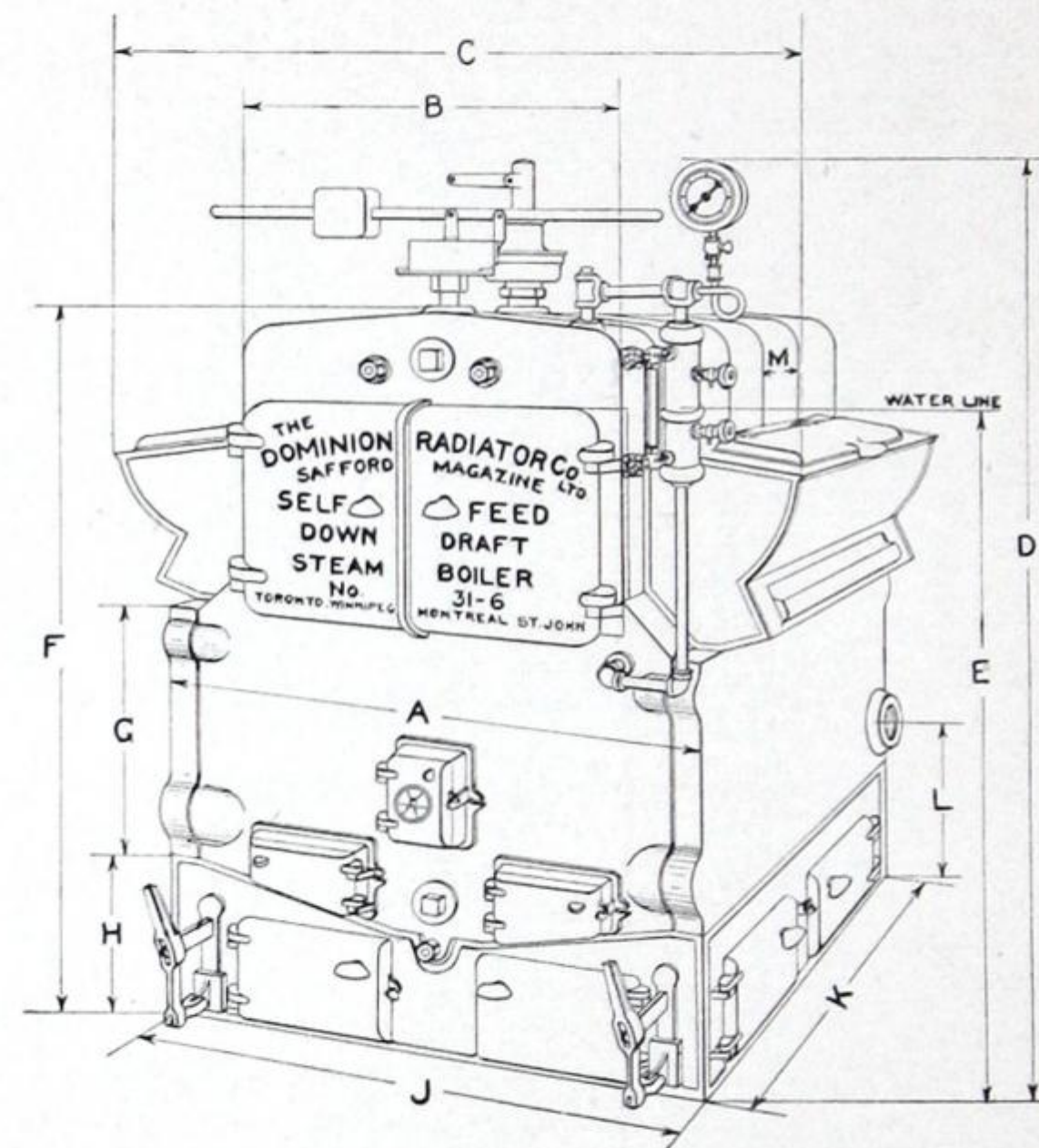
THE SAFFORD MAGAZINE SELF-FEED DOWN DRAFT BOILERS



26" Series



31" and 47" Series
Measurements see page 53



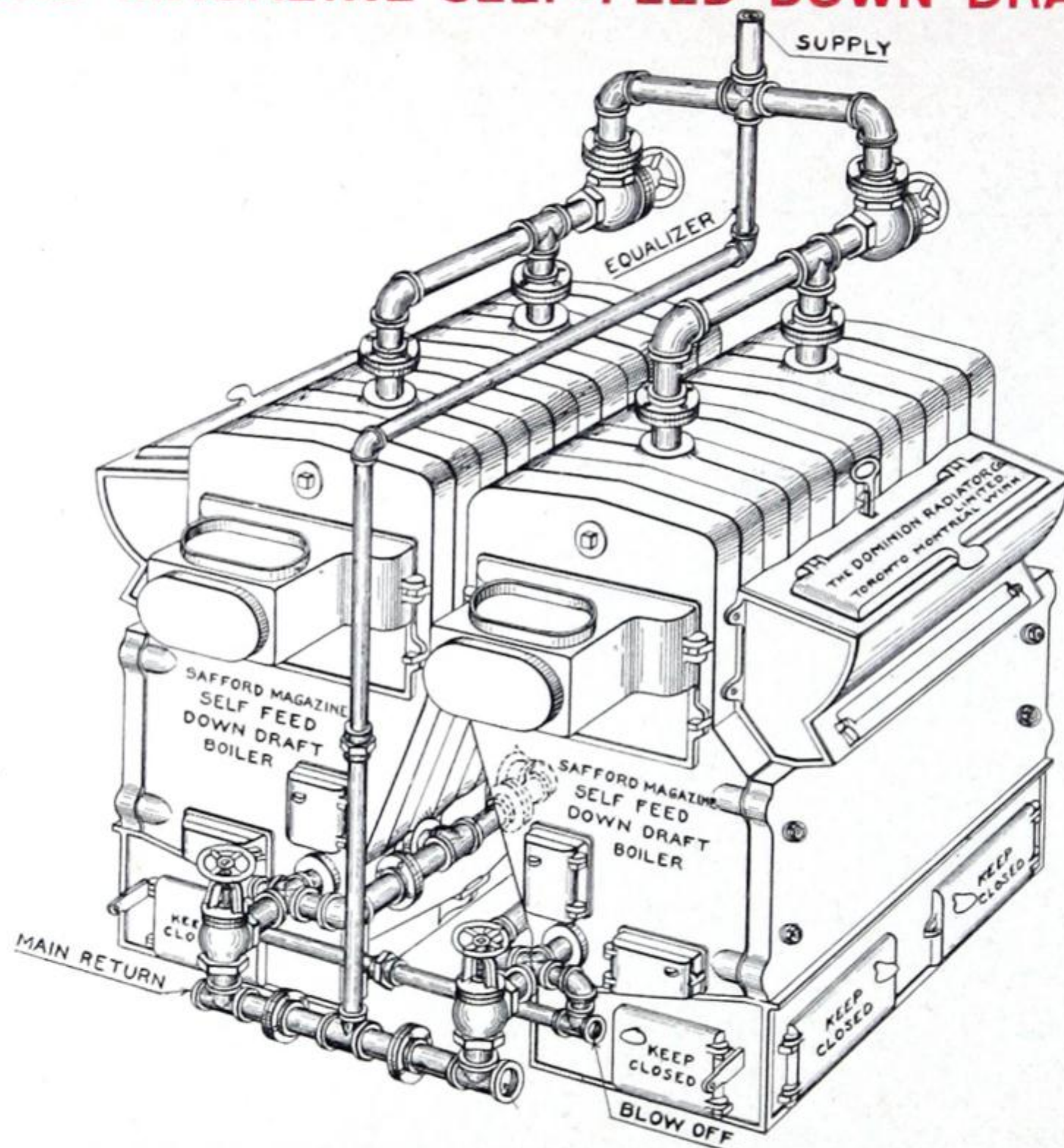
31" and 47" Series

THE SAFFORD MAGAZINE SELF-FEED DOWN DRAFT BOILERS

Measurements

Dimensions				Dimension K					
Name	26"	31"	47"	26"	K	31	K	47	K
A	33"	45"		26-3	18"	31-5	30"	47-5	50 1/2"
B	26 1/2"	32"		26-4	24"	31-6	36"	47-6	59"
C	40"	58"		26-5	30"	31-7	42"	47-7	67 1/2"
D	74"	76"		26-6	36"	31-8	48"	47-8	76"
E	53 "	55"		26-7	42"	31-9	54"	47-9	84 1/2"
F	61"	63"		26-8	48"	31-10	60"	47-10	93"
G]	22 1/4"	22 1/4"		26-9	54"	31-11	66"	47-11	101 1/2"
H	13 1/2"	13 1/2"						47-12	110"
J	25"	45"							
L	13 1/2"	17"							
M	6"-Sec.	6"-Sec.							
N	13 1/2"	13 1/2"							
O	13 1/2"	14 1/2"							
P	7 1/2"	8 1/2"							
R	(10")-12 1/2	(12")-15 1/2 (14")-8 1/2x 20"							

THE SAFFORD MAGAZINE SELF-FEED DOWN DRAFT BOILERS



The above cut illustrates two twin connected SELF-FEED steam boilers less trimmings.

THE
SAFFORD SECTIONAL

STEAM AND HOT-WATER BOILERS

MADE IN TWENTY-SEVEN SIZES, EITHER STEAM OR WATER

300 TO 9,375 SQUARE FEET STEAM RADIATION

900 TO 15,400 SQUARE FEET WATER RADIATION

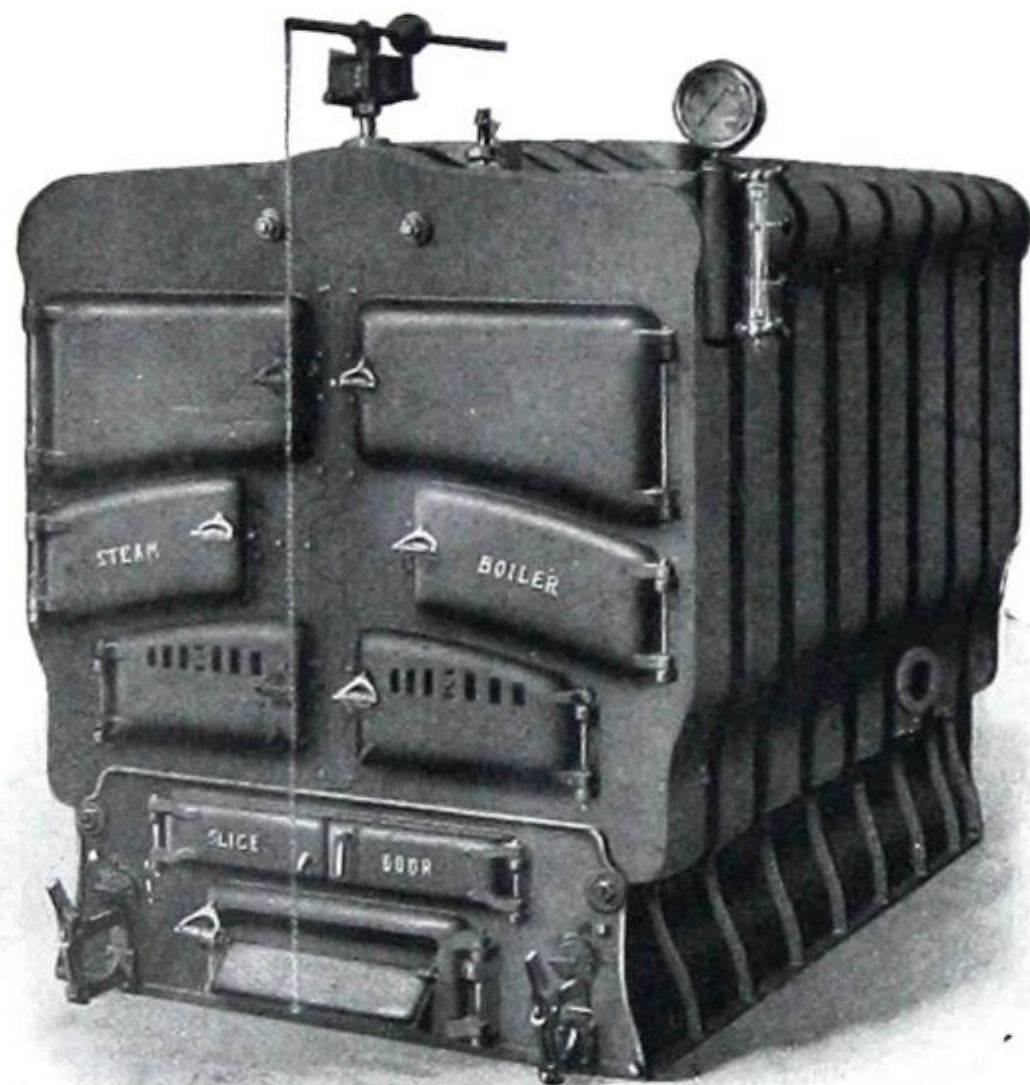
Information required for ordering Boilers and Boiler repairs, see page 116

THE

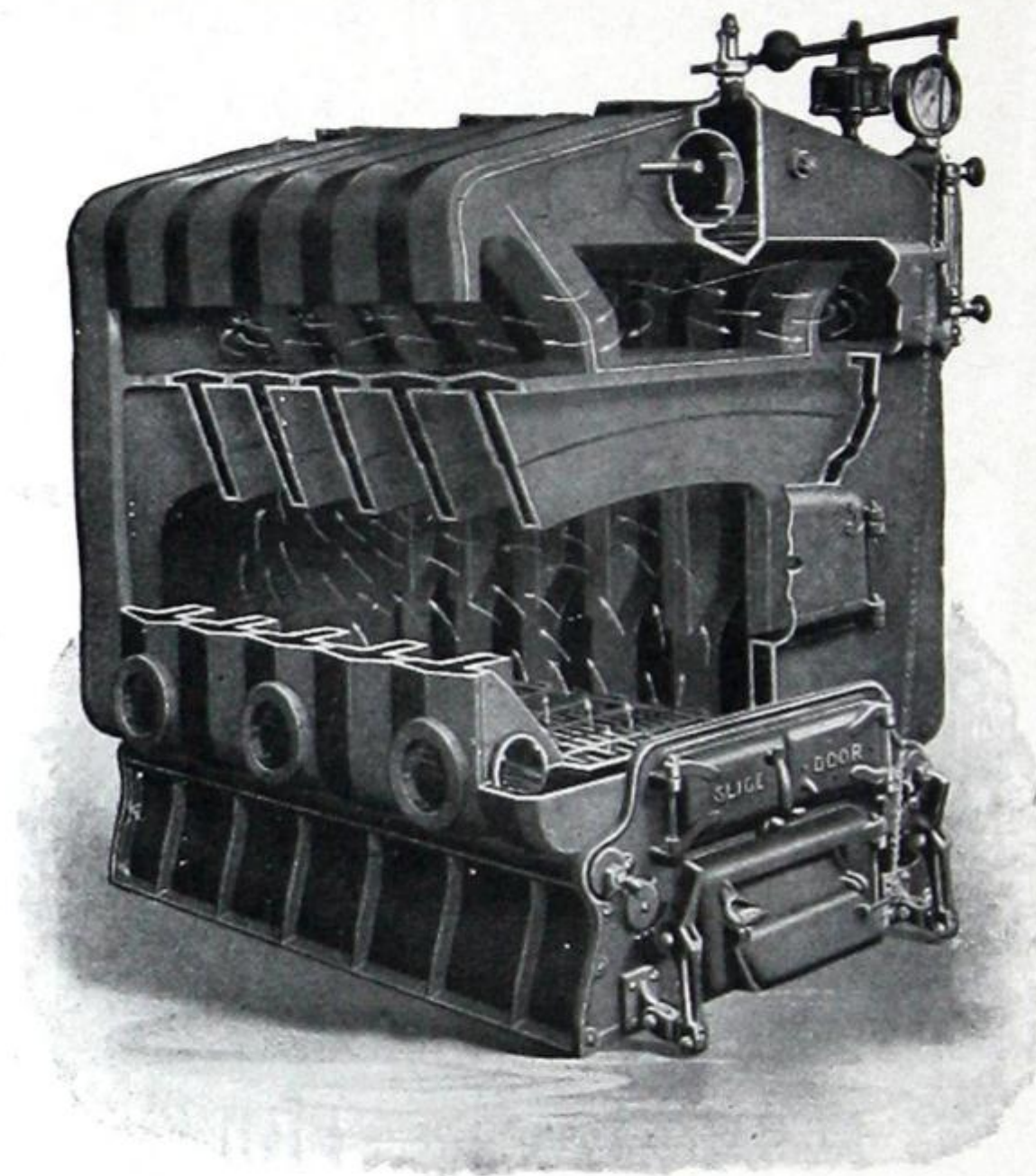
DOMINION RADIATOR COMPANY
LIMITED

St. John Montreal Hamilton TORONTO Winnipeg Calgary Vancouver

SAFFORD SECTIONAL STEAM AND WATER BOILERS

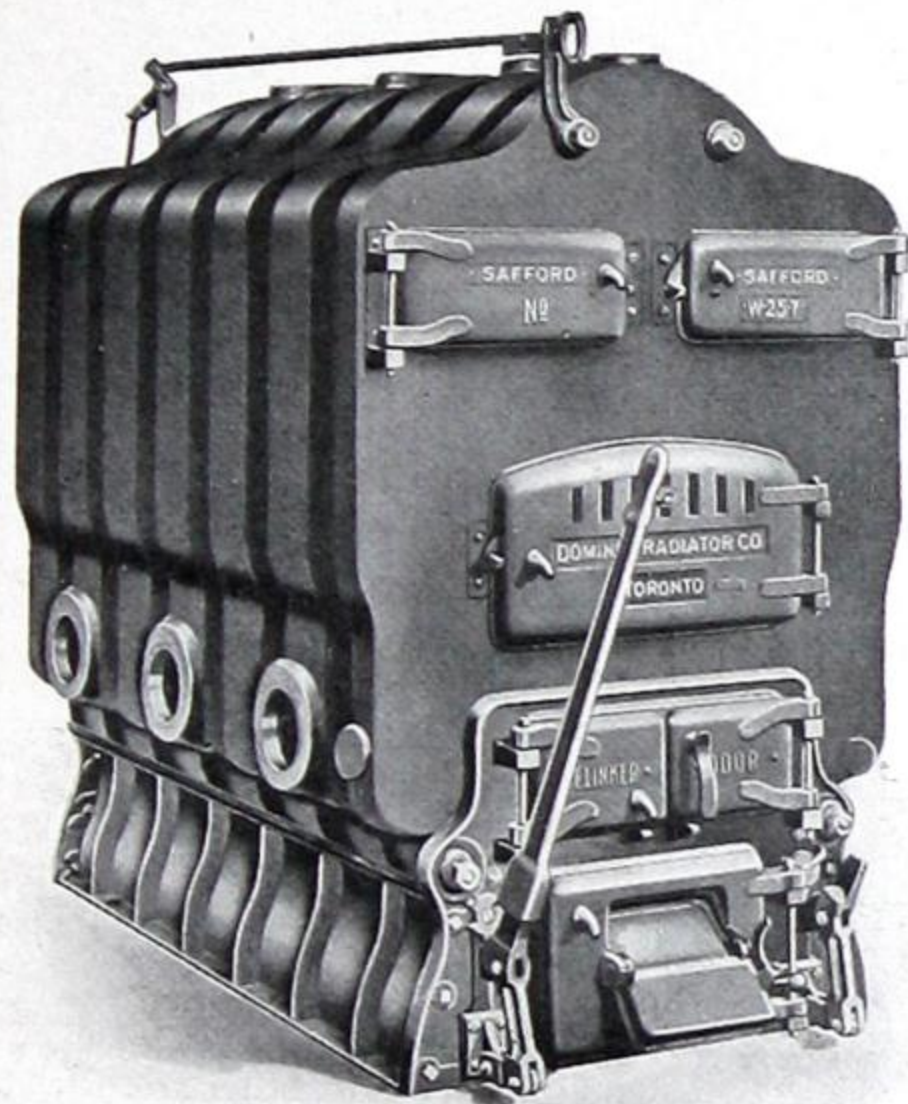


STEAM
No. S-48-8 BOILER (Patented)

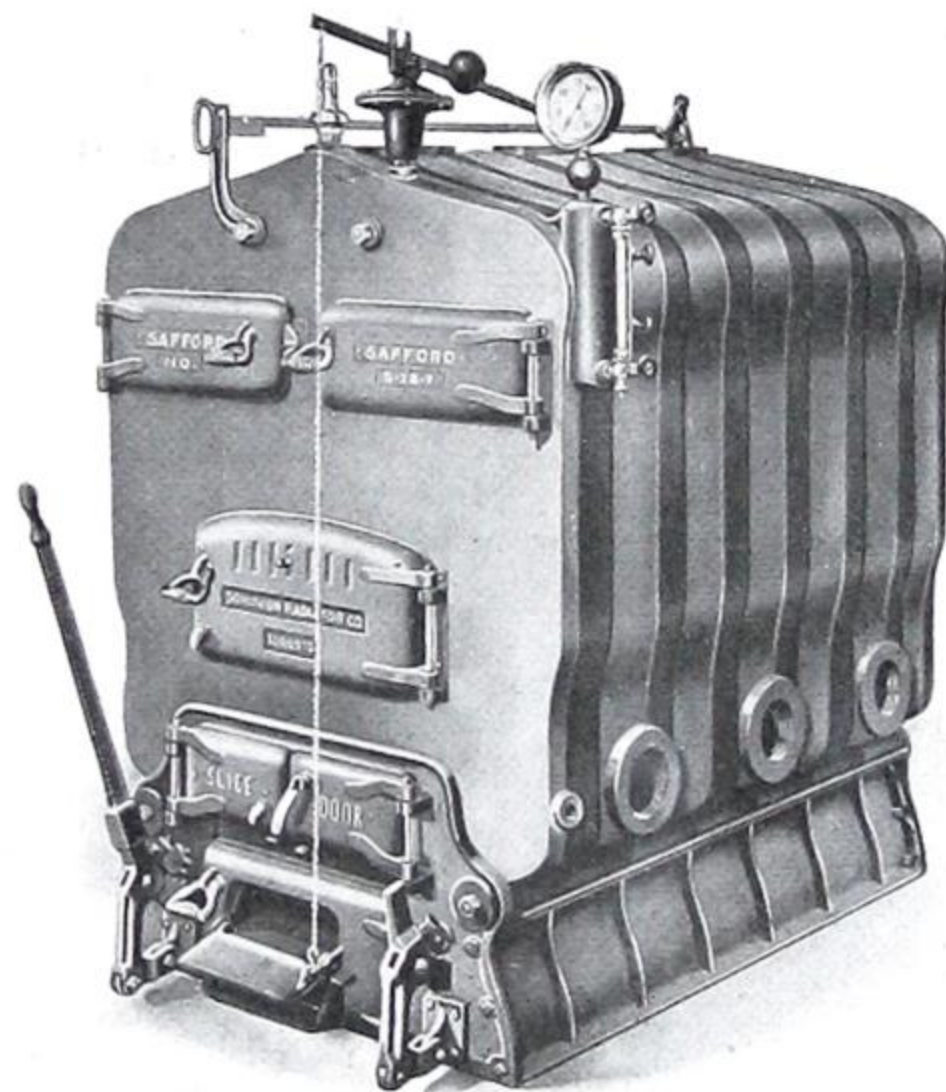


STEAM
No. S-36-7 BOILER

SAFFORD SECTIONAL STEAM AND WATER BOILERS



WATER
No. W-25-7 BOILER



STEAM
No. S-25-7 BOILER

SAFFORD SECTIONAL STEAM AND WATER BOILERS**SAFFORD SECTIONAL STEAM BOILERS****List Prices and Data**

No. Includ'g Sections	List Price Complete	Ratings (Note)		Length Total Inches	Height Total Inches	Width Total Inches	Water Line Inches	Grate Area Sq. Ft.	Average Fire Pot Sq. Ft.	Outlets Inches	Smoke Pipe Inches	Ash Pit (Inside) Inches	No. Including Sections
		Sq. Feet Radiation	Feet 1" Pipe										
S-15-4	\$215.00	300	900	40 ⁷ / ₈	53 ¹ / ₂	34 ¹ / ₂	40 ⁷ / ₈	1.95	2.47	2-3	8	20 ¹ / ₈ x 21 ⁵ / ₈	S-15-4
S-15-5	255.00	425	1,275	47 ¹ / ₈	53 ¹ / ₂	34 ¹ / ₂	40 ⁷ / ₈	2.60	3.30	2-3	8	20 ¹ / ₈ x 27 ¹ / ₈	S-15-5
S-15-6	295.00	550	1,650	53 ³ / ₈	53 ¹ / ₂	34 ¹ / ₂	40 ⁷ / ₈	3.25	4.13	2-3	8	20 ¹ / ₈ x 34	S-15-6
S-19-5	312.50	600	1,800	51 ³ / ₄	55 ³ / ₄	38	43 ³ / ₈	3.32	4.00	2-3	9	20 x 29 ¹ / ₈	S-19-5
S-19-6	350.00	750	2,250	58 ³ / ₈	55 ³ / ₄	38	43 ³ / ₈	4.15	5.00	2-3	9	20 x 36 ⁵ / ₈	S-19-6
S-19-7	400.00	900	2,700	65	55 ³ / ₄	38	43 ³ / ₈	4.98	6.00	3-3	9	20 x 43 ⁵ / ₈	S-19-7
S-22-5	375.00	800	2,400	53 ¹ / ₄	59 ¹ / ₂	42	46 ¹ / ₄	4.08	4.84	2-4	10	23 ¹ / ₈ x 31 ¹ / ₈	S-22-5
S-22-6	425.00	1,000	3,000	60 ¹ / ₄	59 ¹ / ₂	42	46 ¹ / ₄	5.10	6.05	2-4	10	23 ¹ / ₈ x 38 ⁷ / ₈	S-22-6
S-22-7	475.00	1,200	3,600	67 ¹ / ₄	59 ¹ / ₂	42	46 ¹ / ₄	6.12	7.26	3-4	10	23 ¹ / ₈ x 45 ¹ / ₈	S-22-7
S-25-5	450.00	1,100	3,300	59 ¹ / ₄	64 ¹ / ₈	47 ¹ / ₄	51	5.44	6.48	2-4	11	28 x 35 ³ / ₈	S-25-5
S-25-6	512.50	1,350	4,050	66 ⁷ / ₈	64 ¹ / ₈	47 ¹ / ₄	51	6.80	8.10	2-4	11	28 x 42 ⁷ / ₈	S-25-6
S-25-7	575.00	1,600	4,800	74 ¹ / ₂	64 ¹ / ₈	47 ¹ / ₄	51	8.16	9.72	3-4	11	28 x 50 ⁹ / ₈	S-25-7
S-25-8	637.50	1,850	5,550	82 ¹ / ₄	64 ¹ / ₈	47 ¹ / ₄	51	9.52	11.34	3-4	11	28 x 58 ¹ / ₄	S-25-8
S-28-5	500.00	1,300	3,900	60	67 ¹ / ₈	50 ¹ / ₂	53 ³ / ₈	6.24	7.33	2-4	12	30 ⁵ / ₈ x 35 ¹ / ₂	S-28-5
S-28-6	587.50	1,625	4,875	68	67 ¹ / ₈	50 ¹ / ₂	53 ³ / ₈	7.80	9.16	2-4	12	30 ⁵ / ₈ x 43 ¹ / ₂	S-28-6
S-28-7	662.50	1,950	5,850	76	67 ¹ / ₈	50 ¹ / ₂	53 ³ / ₈	9.36	10.99	3-4	12	30 ⁵ / ₈ x 51 ¹ / ₂	S-28-7
S-28-8	750.00	2,275	6,825	84	67 ¹ / ₈	50 ¹ / ₂	53 ³ / ₈	10.92	12.83	3-4	12	30 ⁵ / ₈ x 59 ¹ / ₂	S-28-8
S-36-5	700.00	2,100	6,300	69 ³ / ₄	76 ¹ / ₄	60	60 ³ / ₄	9.12	10.40	2-5	15	38 ¹ / ₈ x 40 ³ / ₄	S-36-5
S-36-6	837.50	2,625	7,875	78 ⁷ / ₈	76 ¹ / ₄	60	60 ³ / ₄	11.40	13.00	2-5	15	38 ¹ / ₈ x 49 ⁷ / ₈	S-36-6
S-36-7	962.50	3,150	9,450	88	76 ¹ / ₄	60	60 ³ / ₄	13.68	15.60	3-5	15	38 ¹ / ₈ x 59	S-36-7
S-36-8	1,100.00	3,675	11,025	97 ¹ / ₈	76 ¹ / ₄	60	60 ³ / ₄	15.96	18.20	3-5	15	38 ¹ / ₈ x 68 ¹ / ₈	S-36-8
S-36-9	1,225.00	4,200	12,600	106 ¹ / ₄	76 ¹ / ₄	60	60 ³ / ₄	18.24	20.80	4-5	15	38 ¹ / ₈ x 77 ¹ / ₄	S-36-9
S-48-6	1,500.00	5,275	15,825	92	97	80	72	18.00	18.75	2-6	21	52 x 54 ¹ / ₂	S-48-6
S-48-7	1,750.00	6,300	18,900	102 ³ / ₄	97	80	72	21.60	22.50	2-6	21	52 x 65 ¹ / ₄	S-48-7
S-48-8	2,012.50	7,325	21,975	113 ¹ / ₂	97	80	72	25.20	26.25	3-6	21	52 x 76	S-48-8
S-48-9	2,262.50	8,350	24,950	124 ¹ / ₄	97	80	72	28.80	30.00	3-6	21	52 x 86 ³ / ₄	S-48-9
S-48-10	2,525.00	9,375	28,125	135	97	80	72	32.40	33.75	3-6	21	52 x 97 ¹ / ₂	S-48-10

Additional measurements on pages 60 and 61. For each supply outlet on top of Boiler there are corresponding return inlets on both sides. Return tappings on 48-inch Steam Boilers are 4-inches, and the two on the face of back section should be yoked together and used in preference to the other inlets. Do not bush flow-pipe outlets—connect all of them full size to the main. Above are hard-coal ratings—soft coal requires one size larger in each case. See Note on Ratings, page 7. For Wood Burning—On special order the 19-inch Boilers are fitted with special grates and 10¹/₄ x 18-inch fire-door; 22-inch and 25-inch, with 11¹/₈ x 18-inch fire door; 28-inch with 12¹/₈ x 19⁷/₈-inch fire door; 36-inch, with 13¹/₈ x 24-inch fire door. All Boilers can be furnished with pea coal grates if required. Include mains and returns in determining capacity required.

All above boilers shipped from Winnipeg Branch for west of Winnipeg are furnished with pea coal grates unless otherwise ordered. For amount of asbestos cement required to cover each size of boiler, see page 256.

SAFFORD SECTIONAL STEAM AND WATER BOILERS

SAFFORD SECTIONAL WATER BOILERS

List Prices and Data

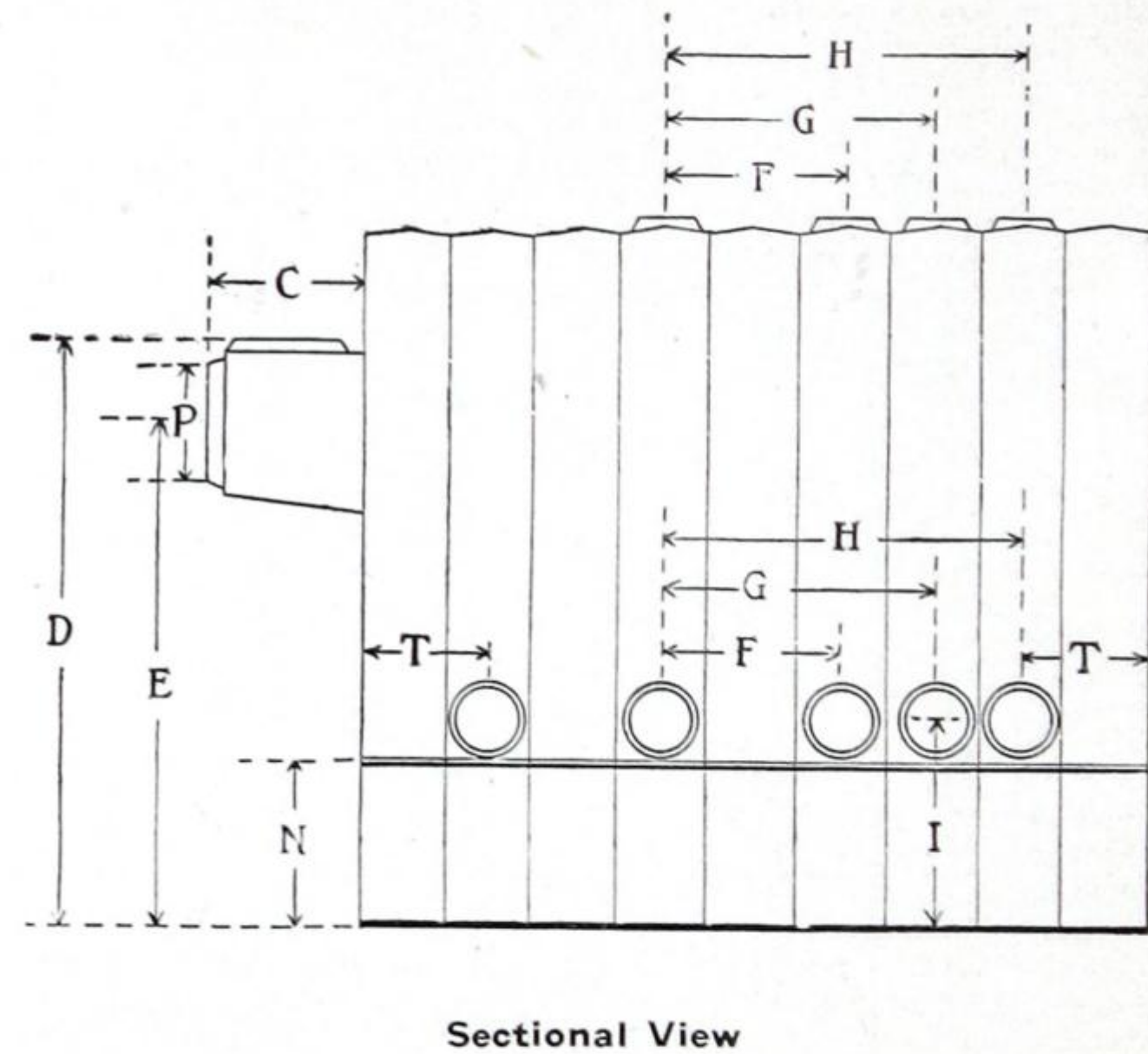
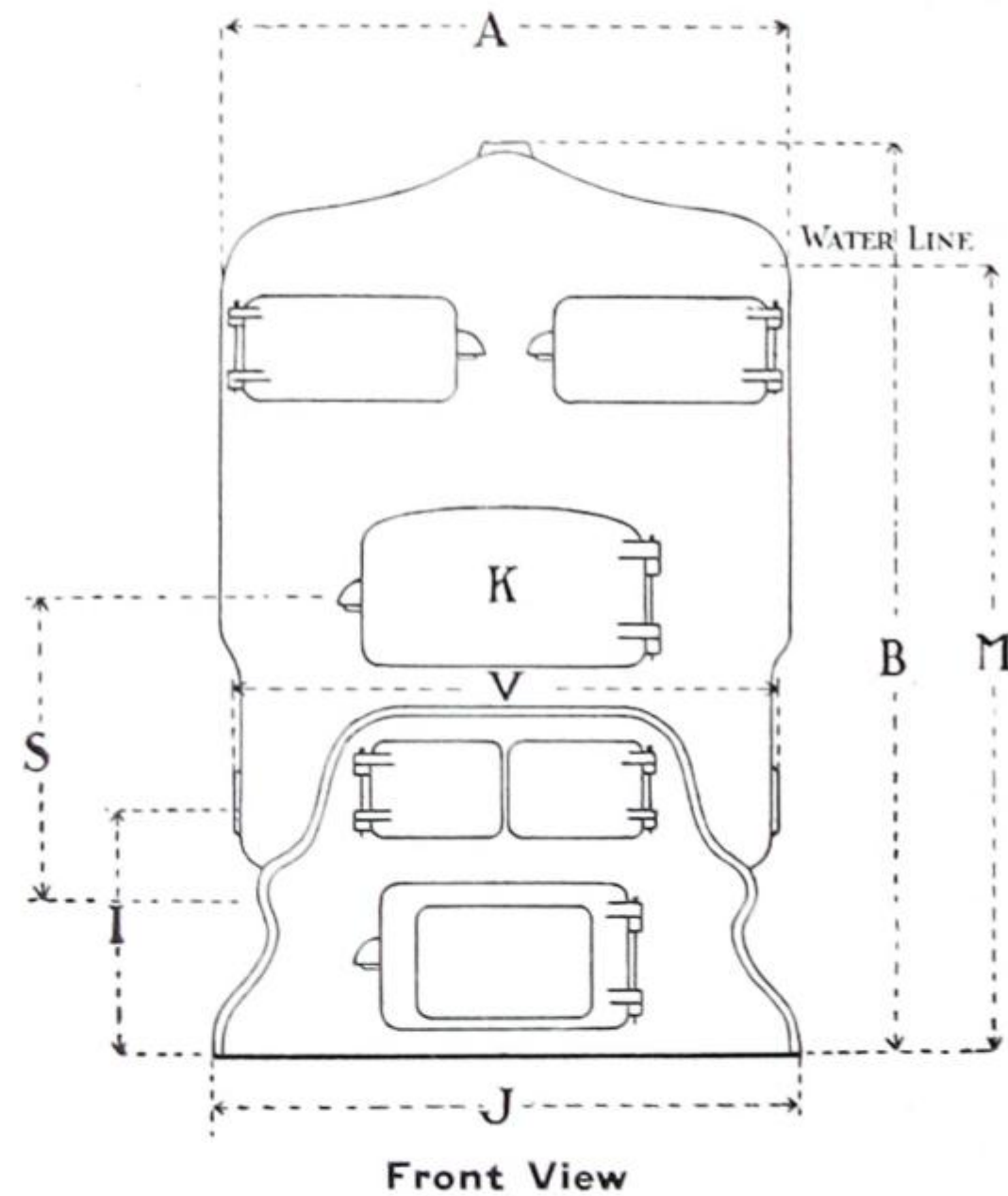
Number Including Sections	List Price Complete	Ratings (Note)		Length Total Inches	Height Total Inches	Width Total Inches	Grate Area Sq. Feet	Average Fire Pot Sq. Feet	Outlets Inches	Smoke Pipe Inches	Ash Pit (Inside) Pipe	No. Including Sections
		Sq. Feet Radiation	Feet 1" Pipe									
W-15-4	\$ 190.00	500	1,500	40 $\frac{7}{8}$	42 $\frac{1}{2}$	27 $\frac{1}{2}$	1.95	2.47	2-3	8	20 $\frac{1}{8}$ x 21 $\frac{5}{8}$	W-15-4
W-15-5	230.00	700	2,100	47 $\frac{1}{8}$	42 $\frac{1}{2}$	27 $\frac{1}{2}$	2.60	3.30	2-3	8	20 $\frac{1}{8}$ x 27 $\frac{1}{8}$	W-15-5
W-15-6	270.00	900	2,700	53 $\frac{3}{8}$	42 $\frac{1}{2}$	27 $\frac{1}{2}$	3.25	4.13	2-3	8	20 $\frac{1}{8}$ x 34	W-15-6
W-19-5	287.50	1,000	3,000	51 $\frac{3}{4}$	50	31 $\frac{1}{4}$	3.32	4.00	2-3	9	20 x 29 $\frac{1}{8}$	W-19-5
W-19-6	325.00	1,250	3,750	58 $\frac{3}{8}$	50	31 $\frac{1}{4}$	4.15	5.00	2-3	9	20 x 36 $\frac{5}{8}$	W-19-6
W-19-7	375.00	1,500	4,500	65	50	31 $\frac{1}{4}$	4.98	6.00	3-3	9	20 x 43 $\frac{5}{8}$	W-19-7
W-22-5	350.00	1,300	3,900	53 $\frac{1}{4}$	53	35 $\frac{1}{4}$	4.08	4.84	2-4	10	23 $\frac{1}{8}$ x 31 $\frac{1}{8}$	W-22-5
W-22-6	400.00	1,650	4,950	60 $\frac{1}{4}$	53	35 $\frac{1}{4}$	5.10	6.05	2-4	10	23 $\frac{1}{8}$ x 38 $\frac{7}{8}$	W-22-6
W-22-7	450.00	2,000	6,000	67 $\frac{1}{4}$	53	35 $\frac{1}{4}$	6.12	7.26	3-4	10	23 $\frac{1}{8}$ x 45 $\frac{1}{8}$	W-22-7
W-25-5	425.00	1,825	5,475	59 $\frac{1}{4}$	57 $\frac{7}{8}$	40 $\frac{3}{8}$	5.44	6.48	2-4	11	28 x 35 $\frac{3}{8}$	W-25-5
W-25-6	487.50	2,225	6,675	66 $\frac{7}{8}$	57 $\frac{7}{8}$	40 $\frac{3}{8}$	6.80	8.10	2-4	11	28 x 42 $\frac{7}{8}$	W-25-6
W-25-7	550.00	2,650	7,950	74 $\frac{1}{2}$	57 $\frac{7}{8}$	40 $\frac{3}{8}$	8.16	9.72	3-4	11	28 x 50 $\frac{9}{8}$	W-25-7
W-25-8	612.50	3,050	9,150	82 $\frac{1}{4}$	57 $\frac{7}{8}$	40 $\frac{3}{8}$	9.52	11.34	3-4	11	28 x 58 $\frac{1}{4}$	W-25-8
W-28-5	475.00	2,150	6,450	60	60 $\frac{5}{8}$	43 $\frac{1}{2}$	6.24	7.33	2-4	12	30 $\frac{5}{8}$ x 35 $\frac{1}{2}$	W-28-5
W-28-6	562.50	2,675	8,025	68	60 $\frac{5}{8}$	43 $\frac{1}{2}$	7.80	9.16	2-4	12	30 $\frac{5}{8}$ x 43 $\frac{1}{2}$	W-28-6
W-28-7	637.50	3,200	9,600	76	60 $\frac{5}{8}$	43 $\frac{1}{2}$	9.36	10.99	3-4	12	30 $\frac{5}{8}$ x 51 $\frac{1}{2}$	W-28-7
W-28-8	725.00	3,725	11,175	84	60 $\frac{5}{8}$	43 $\frac{1}{2}$	10.92	12.83	3-4	12	30 $\frac{5}{8}$ x 59 $\frac{1}{2}$	W-28-8
W-36-5	675.00	3,450	10,350	69 $\frac{3}{4}$	69 $\frac{1}{8}$	53 $\frac{1}{4}$	9.12	10.40	2-5	15	38 $\frac{1}{8}$ x 40 $\frac{3}{4}$	W-36-5
W-36-6	800.00	4,325	12,975	78 $\frac{7}{8}$	69 $\frac{1}{8}$	53 $\frac{1}{4}$	11.40	13.00	2-5	15	38 $\frac{1}{8}$ x 49 $\frac{7}{8}$	W-36-6
W-36-7	925.00	5,200	15,600	88	69 $\frac{1}{8}$	53 $\frac{1}{4}$	13.68	15.60	3-5	15	38 $\frac{1}{8}$ x 59	W-36-7
W-36-8	1,062.50	6,050	18,150	97 $\frac{1}{8}$	69 $\frac{1}{8}$	53 $\frac{1}{4}$	15.96	18.20	3-5	15	38 $\frac{1}{8}$ x 68 $\frac{1}{8}$	W-36-8
W-36-9	1,187.50	6,925	20,775	106 $\frac{1}{4}$	69 $\frac{1}{8}$	53 $\frac{1}{4}$	18.24	20.80	4-5	15	38 $\frac{1}{8}$ x 77 $\frac{1}{4}$	W-36-9
W-48-6	1,437.50	8,700	26,100	92	81 $\frac{3}{4}$	68	18.00	18.75	2-6	21	52 x 54 $\frac{1}{2}$	W-48-6
W-48-7	1,687.50	10,375	31,125	102 $\frac{3}{4}$	81 $\frac{3}{4}$	68	21.60	22.50	2-6	21	52 x 65 $\frac{1}{4}$	W-48-7
W-48-8	1,950.00	12,050	36,150	113 $\frac{1}{2}$	81 $\frac{3}{4}$	68	25.20	26.25	3-6	21	52 x 76	W-48-8
W-48-9	2,200.00	13,725	41,175	124 $\frac{1}{4}$	81 $\frac{3}{4}$	68	28.80	30.00	3-6	21	52 x 86 $\frac{3}{4}$	W-48-9
W-48-10	2,462.50	15,400	46,200	135	81 $\frac{3}{4}$	68	32.40	33.75	3-6	21	52 x 97 $\frac{1}{2}$	W-48-10

Additional measurements on pages 60 and 61. For each supply outlet on top of Boiler there are corresponding return inlets on both sides. The return tappings on the back section of the 48-inch Boilers should be yoked together and used in preference to the additional return tappings on either side of the Boiler. Above are hard-coal ratings—soft coal requires one size larger. See Note on ratings, page 7. For Wood Burning—On special order the 19-inch Boilers are fitted with special grates and 10 $\frac{1}{4}$ x 18 -inch fire-door; 22-inch and 25-inch, with 11 $\frac{1}{8}$ x 18-inch fire-door; 28-inch, with 12 $\frac{1}{2}$ x 19 $\frac{1}{2}$ -inch fire door; 36-inch, with 13 $\frac{1}{2}$ x 24-inch fire door. All Boilers can be furnished with pea coal grates, if required.

Include mains and returns in determining capacity required.

All above boilers shipped from Winnipeg Branch for west of Winnipeg are furnished with pea coal grates unless otherwise ordered.

For amount of asbestos cement required to cover each size of boiler, see page 256.

SAFFORD SECTIONAL STEAM AND WATER BOILERS**SAFFORD SECTIONAL BOILER MEASUREMENTS**

For measurements, see page 61.

SAFFORD SECTIONAL STEAM AND WATER BOILERS

SAFFORD SECTIONAL BOILER MEASUREMENTS

Tables of distances between points as noted upon the outline drawings of Safford Sectional Boilers as shown on opposite page. These measurements are all given in inches.

	15-inch Boilers		19-inch Boilers		22-inch Boilers		25-inch Boilers		28-inch Boilers		36-inch Boilers		48-inch Boilers	
	Water	Steam	Water	Steam	Water	Steam	Water	Steam	Water	Steam	Water	Steam	Water	Steam
A	27 $\frac{1}{2}$	28 $\frac{1}{2}$	31 $\frac{1}{4}$	32 $\frac{1}{4}$	36 $\frac{1}{4}$	36 $\frac{1}{4}$	40 $\frac{3}{8}$	41 $\frac{3}{8}$	44 $\frac{1}{2}$	44 $\frac{1}{2}$	53 $\frac{1}{4}$	54 $\frac{1}{4}$	68	69
B	42 $\frac{1}{16}$	46 $\frac{3}{16}$	50	50	52 $\frac{1}{4}$	52 $\frac{1}{4}$	57 $\frac{7}{8}$	57 $\frac{7}{8}$	60 $\frac{5}{8}$	60 $\frac{5}{8}$	69 $\frac{1}{8}$	69 $\frac{1}{8}$	81 $\frac{3}{4}$	81 $\frac{3}{4}$
†C	13 $\frac{3}{16}$	13 $\frac{3}{16}$	15 $\frac{5}{8}$	15 $\frac{5}{8}$	15 $\frac{1}{4}$	15 $\frac{1}{4}$	17 $\frac{1}{2}$	17 $\frac{1}{2}$	18 $\frac{1}{8}$	18 $\frac{1}{8}$	21 $\frac{1}{8}$	21 $\frac{1}{8}$	27 $\frac{1}{4}$	27 $\frac{1}{4}$
‡D	41 $\frac{1}{8}$	41 $\frac{1}{8}$	45 $\frac{1}{8}$	45 $\frac{1}{8}$	47 $\frac{3}{4}$	47 $\frac{3}{4}$	53	53	55 $\frac{7}{8}$	55 $\frac{7}{8}$	63 $\frac{3}{8}$	63 $\frac{3}{8}$	73 $\frac{1}{8}$	73 $\frac{1}{8}$
E	34 $\frac{3}{4}$	34 $\frac{3}{4}$	37 $\frac{3}{4}$	37 $\frac{3}{4}$	40 $\frac{1}{2}$	40 $\frac{1}{2}$	44 $\frac{1}{8}$	44 $\frac{1}{8}$	46 $\frac{1}{4}$	46 $\frac{1}{4}$	52 $\frac{9}{16}$	52 $\frac{9}{16}$	59 $\frac{1}{2}$	59 $\frac{1}{2}$
F	12 $\frac{1}{2}$	12 $\frac{1}{2}$	13 $\frac{1}{4}$	13 $\frac{1}{4}$	14 $\frac{1}{8}$	14 $\frac{1}{8}$	15 $\frac{3}{8}$	15 $\frac{3}{8}$	16	16	18 $\frac{1}{4}$	18 $\frac{1}{4}$	21 $\frac{1}{2}$	21 $\frac{1}{2}$
G	18 $\frac{3}{4}$	18 $\frac{3}{4}$	19 $\frac{7}{8}$	19 $\frac{7}{8}$	21 $\frac{1}{4}$	21 $\frac{1}{4}$	23 $\frac{1}{8}$	23 $\frac{1}{8}$	24	24	27 $\frac{3}{8}$	27 $\frac{3}{8}$	32 $\frac{1}{4}$	32 $\frac{1}{4}$
H	25	25	26 $\frac{1}{2}$	26 $\frac{1}{2}$	28 $\frac{1}{4}$	28 $\frac{1}{4}$	30 $\frac{3}{4}$	30 $\frac{3}{4}$	32	32	36 $\frac{1}{2}$	36 $\frac{1}{2}$	43	43
I	16 $\frac{3}{16}$	16 $\frac{3}{16}$	16	16	16 $\frac{3}{4}$	16 $\frac{3}{4}$	17 $\frac{3}{4}$	17 $\frac{3}{4}$	17 $\frac{7}{8}$	17 $\frac{7}{8}$	18 $\frac{1}{8}$	18 $\frac{1}{8}$	22 $\frac{3}{8}$	22 $\frac{3}{8}$
J	23 $\frac{3}{4}$	23 $\frac{3}{4}$	26	26	29 $\frac{1}{8}$	29 $\frac{1}{8}$	30 $\frac{3}{4}$	30 $\frac{3}{4}$	37 $\frac{1}{8}$	37 $\frac{1}{8}$	45 $\frac{1}{8}$	45 $\frac{1}{8}$	58 $\frac{3}{8}$	58 $\frac{3}{8}$
K	8x14	8x14	*8x14	*8x14	*8x14	*8x14	*9x18	*9x18	*9x18	*9x18	10x20	10x20	11x19	11x19
M	.....	40 $\frac{7}{8}$	.....	43 $\frac{3}{8}$	.....	46 $\frac{1}{4}$	.....	51	.....	53 $\frac{3}{8}$	.....	60 $\frac{3}{4}$	.....	72
N	11 $\frac{3}{4}$	11 $\frac{3}{4}$	9 $\frac{3}{8}$	9 $\frac{3}{8}$	9 $\frac{1}{2}$	9 $\frac{1}{2}$	9 $\frac{7}{8}$	9 $\frac{7}{8}$	10	10	10 $\frac{1}{4}$	10 $\frac{1}{4}$	14 $\frac{1}{4}$	14 $\frac{1}{4}$
P	8	8	9	9	10	10	11	11	12	12	15	15	21	21
S	13 $\frac{1}{4}$	13 $\frac{1}{4}$	13 $\frac{1}{4}$	13 $\frac{1}{4}$	14 $\frac{1}{2}$	14 $\frac{1}{2}$	15	15	16	16	18 $\frac{1}{8}$	18 $\frac{1}{8}$	17 $\frac{3}{4}$	17 $\frac{3}{4}$
T	7 $\frac{1}{2}$	7 $\frac{1}{2}$	8	8	8 $\frac{1}{2}$	8 $\frac{1}{2}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$	9 $\frac{1}{2}$	9 $\frac{1}{2}$	10 $\frac{7}{8}$	10 $\frac{7}{8}$	12 $\frac{3}{4}$	.....

† Measured without Smoke Hood Cover. ‡ Measured with Smoke Hood Cover on. * For Wood, Feed Door K in 19-inch Boilers is 10 $\frac{1}{4}$ x 18 inches; in 22-inch Boilers, 11 $\frac{1}{8}$ x 18 inches; in 25-inch Boilers, 11 $\frac{1}{8}$ x 18 inches; in 28-inch Boilers, 12 $\frac{7}{8}$ x 20 inches. Do not bush the flow-pipe outlets of Steam Boilers; connect all of them full size to the main.

The distance between the faces of the bosses in which return inlets are tapped on each side of the boiler in both Steam and Water Boilers is as follows:—15-inch grate, 25 $\frac{1}{2}$ inches; 22-inch grate, 33 $\frac{9}{16}$ inches; 28-inch grate, 41 $\frac{1}{8}$ inches; 36-inch grate, 52 $\frac{5}{8}$ inches; 48-inch grate, 64 $\frac{1}{4}$ inches.

SAFFORD SECTIONAL STEAM AND WATER BOILERS

SECTIONAL BOILER PARTS

List Price of Parts to Increase Boiler One Size

STEAM				WATER			
No.	Price	No.	Price	No.	Price	No.	Price
15-inch.....	\$40.00	28-inch.....	\$ 87.50	15-inch.....	\$ 40.00	28-inch.....	\$ 87.50
19-inch.....	50.00	36-inch.....	125.00	19-inch.....	50.00	36-inch.....	125.00
22-inch.....	50.00	48-inch.....	250.00	22-inch.....	50.00	48-inch.....	250.00
25-inch.....	62.50			25-inch.....	62.50		

ARRANGEMENT OF GRATE BARS AND CONNECTING ARMS

Boiler No.	Left-Hand Grate Bars	Right-Hand Grate Bars	Size Right-Hand Connecting Arm	Boiler No.	Left-Hand Grate Bars	Right Hand Grate Bars	Size Right-Hand Connecting Arm
S- or W-15-4.....	3	.....	.....	S- or W-28-6.....	3	2	Medium
S- or W-15-5.....	4	.....	.....	S- or W-28-7.....	3	3	"
S- or W-15-6.....	5	.....	.....	S- or W-28-8.....	4	3	Long
S- or W-19-5.....	4	.....	.....	S- or W-36-5.....	2	2	Short
S- or W-19-6.....	5	.....	.....	S- or W-36-6.....	3	2	Medium
S- or W-19-7.....	6	.....	.....	S- or W-36-7.....	3	3	"
S- or W-22-5.....	2	2	.....	S- or W-36-8.....	4	3	Long
S- or W-22-6.....	3	2	.....	S- or W-36-9.....	4	4	"
S- or W-22-7.....	3	3	Medium	S- or W-48-6.....	3	2	Short
S- or W-25-5.....	2	2	.....	S- or W-48-7.....	3	3	"
S- or W-25-6.....	3	2	Medium	S- or W-48-8.....	4	3	Medium
S- or W-25-7.....	3	3	"	S- or W-48-9.....	4	4	"
S- or W-25-8.....	4	3	Long	S- or W-48-10.....	5	4	Long
S- or W-28-5.....	2	2	.....			

THE
SAFFORD
TRIUMPH MOGUL
WATER HEATERS

MADE IN TEN SIZES WITH CAPACITIES RANGING
FROM 55 GALLONS TO 660 GALLONS PER HOUR

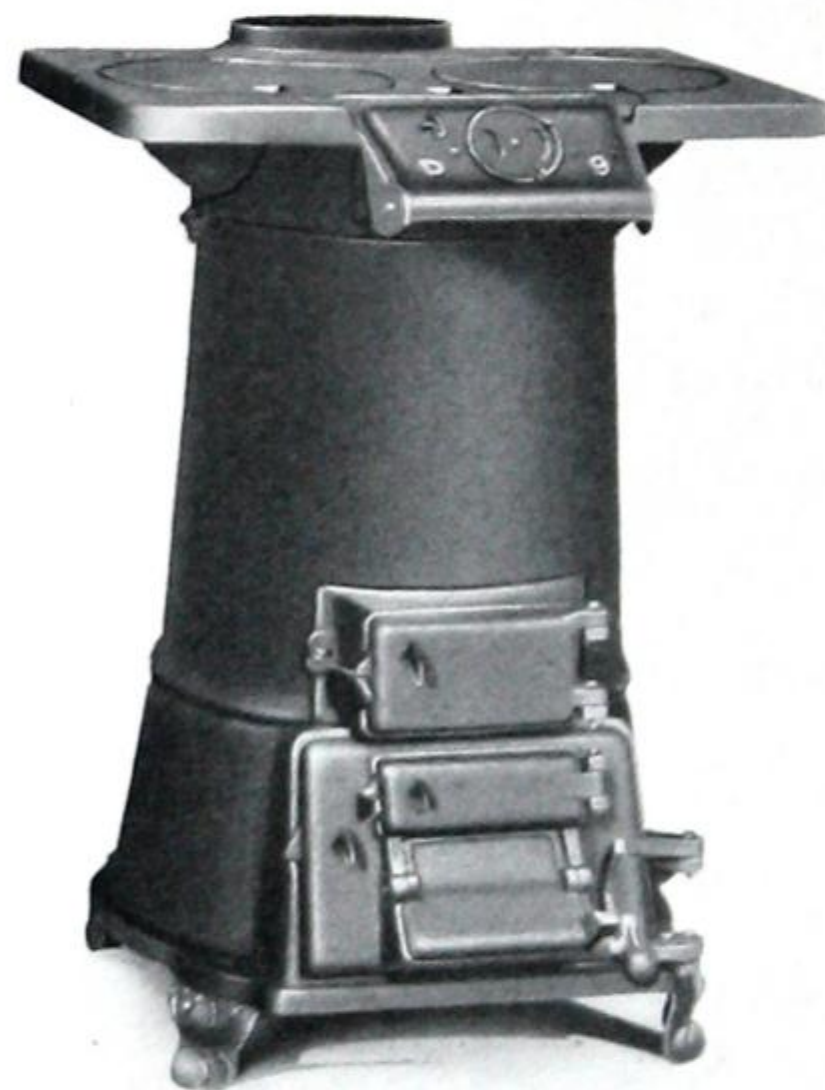
Information required for ordering Boilers and Boiler Repairs, see page 116

MANUFACTURED BY
THE
DOMINION RADIATOR COMPANY
LIMITED

St. John Montreal Hamilton **TORONTO** Winnipeg Calgary Vancouver

TRIUMPH MOGUL WATER HEATERS

BRONCO



TORO



No. T-101

For data and list prices, see pages 66 and 71

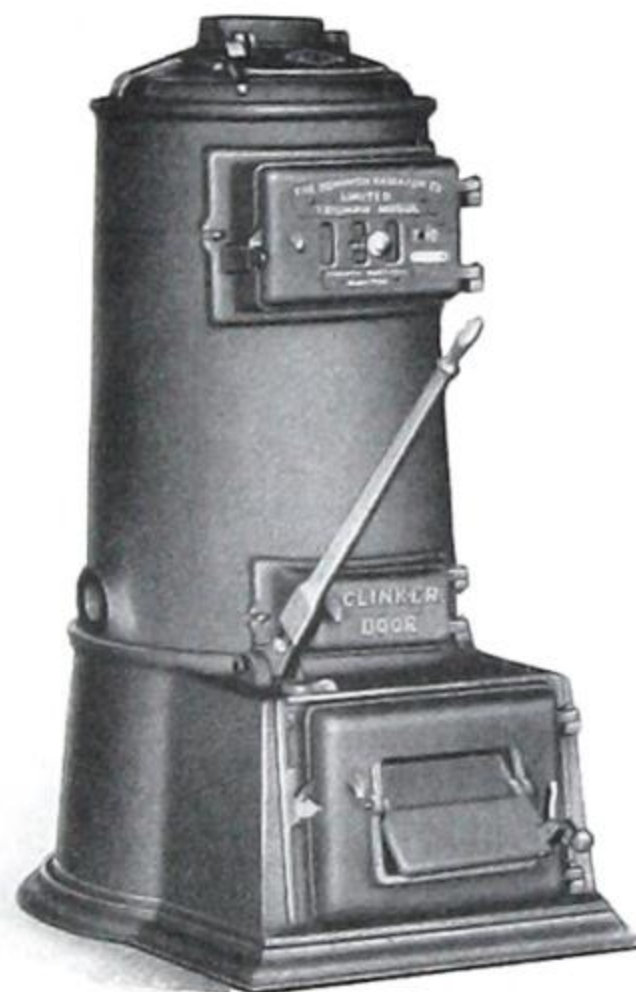
TRIUMPH MOGUL WATER HEATERS



No. T-00



No. T-0



Nos. T-10, T-20, T-30



Nos. T-12, T-22, T-32

For data and list prices, see pages 66 and 71.

TRIUMPH MOGUL WATER HEATERS**LIST PRICES AND DATA**

Pattern Name	No.	Nom. Diam. Grate Inches	Grate	Height Floor to Centre of Flow Inches	Height Floor to Centre of Return Inches	Height to Top of Outlet Inches	Height to Top of Heater Inches	Size of Top Inches	Size Outlets Inches	Capa- city in Gallons	List Price	No.
Bronco Laundry	No.-8	8	Slide-centre	15½	12¾	.....	21½	14x20	1-1	55	\$13.25	No.-8
" "	No.-9	8	"	15½	12¾	.....	21½	15x21½	1-1	55	14.25	No.-9
Toro Laundry	8-D	10	Slide-centre	22¾	12½	.....	30	14x20	1-1½	100	32.00	8-D
" "	9-D	10	"	22¾	12½	.....	30	15x21½	1-1½	100	33.00	9-D
Triumph Mogul, with Base Plate and Legs	T-00	10	"	.....	15	24½	.....	.....	1-1½	60	20.00	T-00
"	T-0	10	"	.....	15	31½	.....	.....	1-1½	90	30.00	T-0
"	T-101	10	"	.....	12¾	33	.....	.....	1-1½	140	40.00	T-101
Triumph Mogul, with Base Plate	T-10	12	Rocking	.....	13½	35½	.....	.....	3-1½	190	48.00	T-10
"	T-12	12	"	.....	13½	40½	.....	.....	3-1½	210	58.00	T-12
"	T-20	15	"	.....	13¾	41½	.....	.....	3-2	380	68.00	T-20
"	T-22	15	"	.....	13¾	47½	.....	.....	3-2	425	80.00	T-22
"	T-30	18	"	.....	13¾	41½	.....	.....	3-2	600	100.00	T-30
"	T-32	18	"	.....	13¾	48	.....	.....	3-2	660	120.00	T-32

Nos. T-10, T-20, T-30 are without dome sections.

Nos. T-12, T-22, T-32 are equipped with dome sections.

Additional measurements, page 70.

For names and list prices of repair parts, see pages 71 to 78.

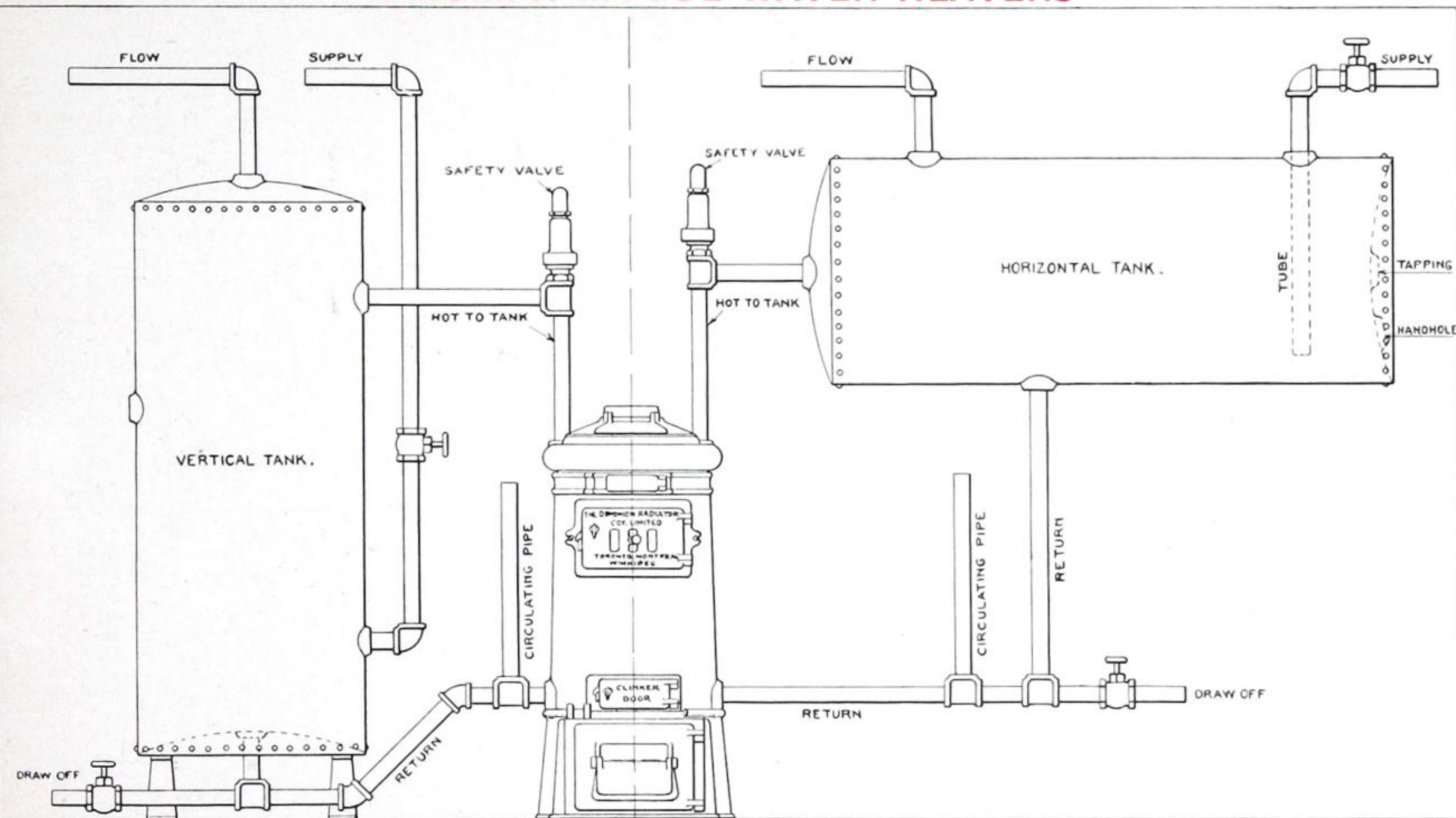
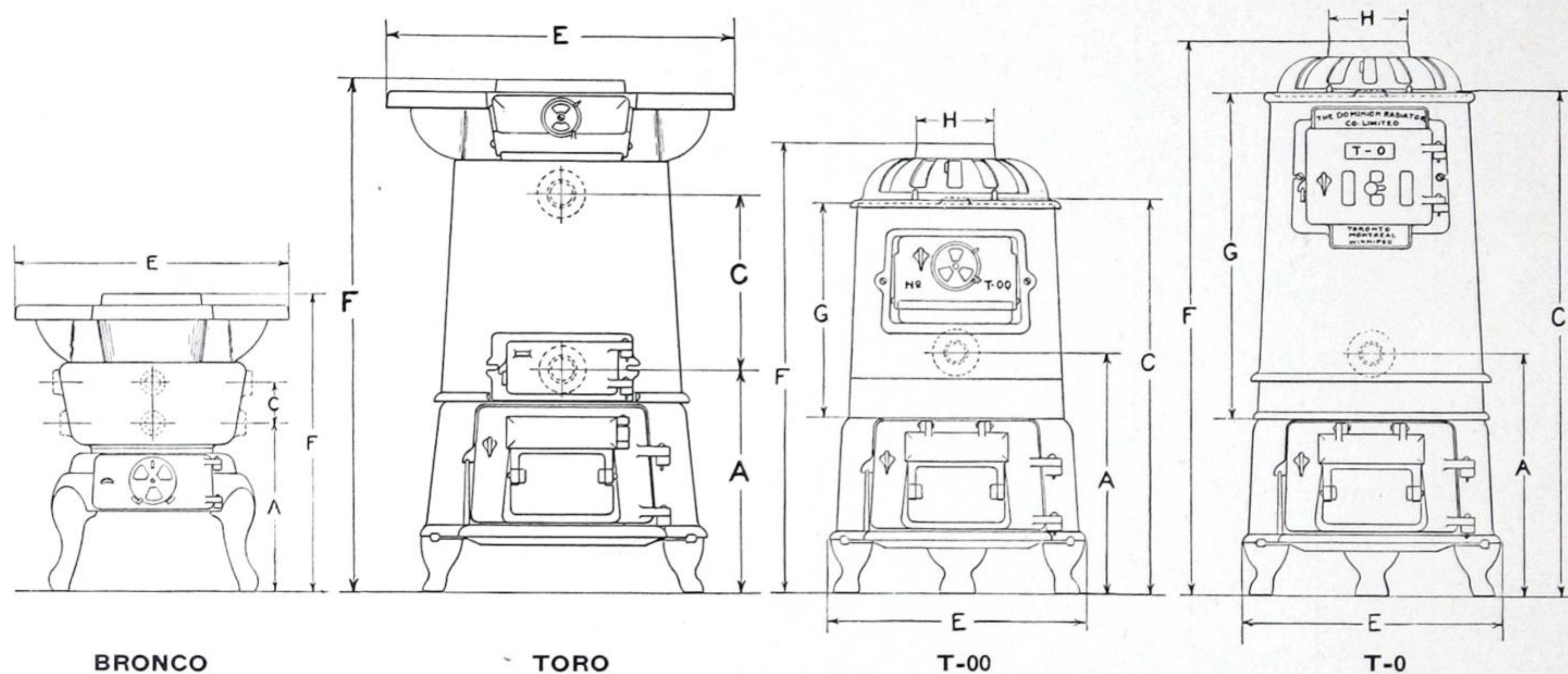
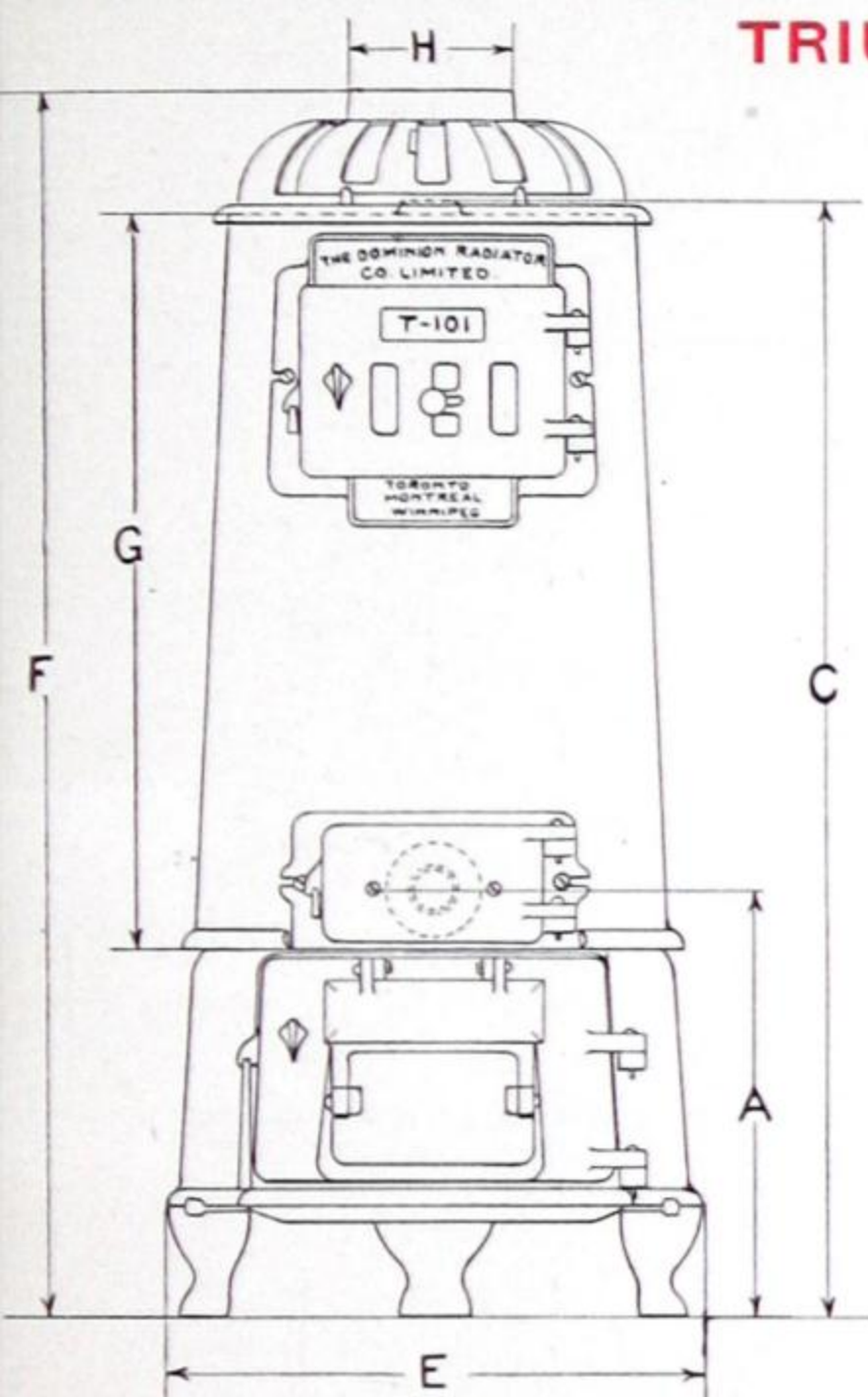
TRIUMPH MOGUL WATER HEATERS

Illustration of proper methods of Connecting Vertical and Horizontal Storage Tanks

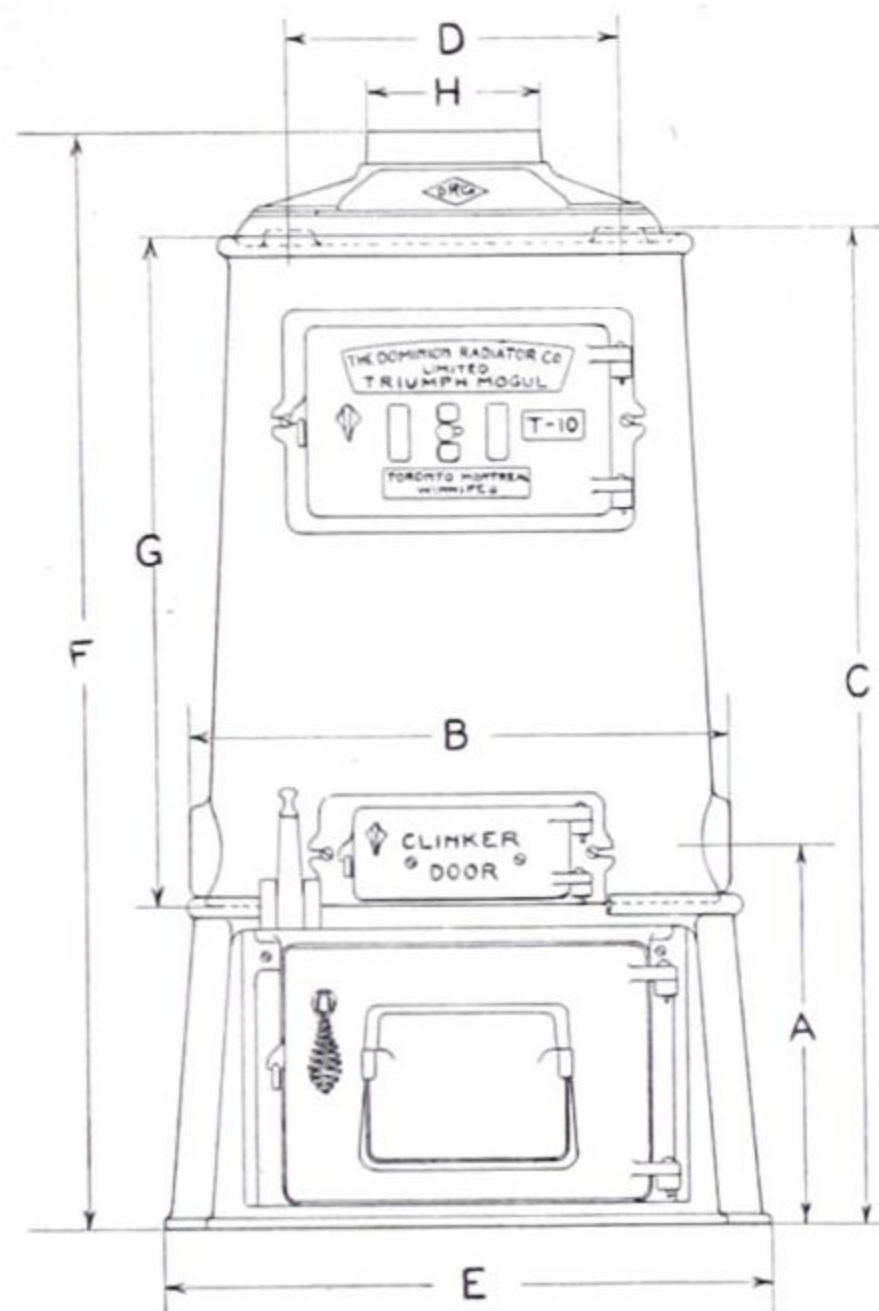
For safety, all Heaters should be connected up with Relief Valves, and in high pressure installations Reducing Valves should be used.

TRIUMPH MOGUL WATER HEATERS

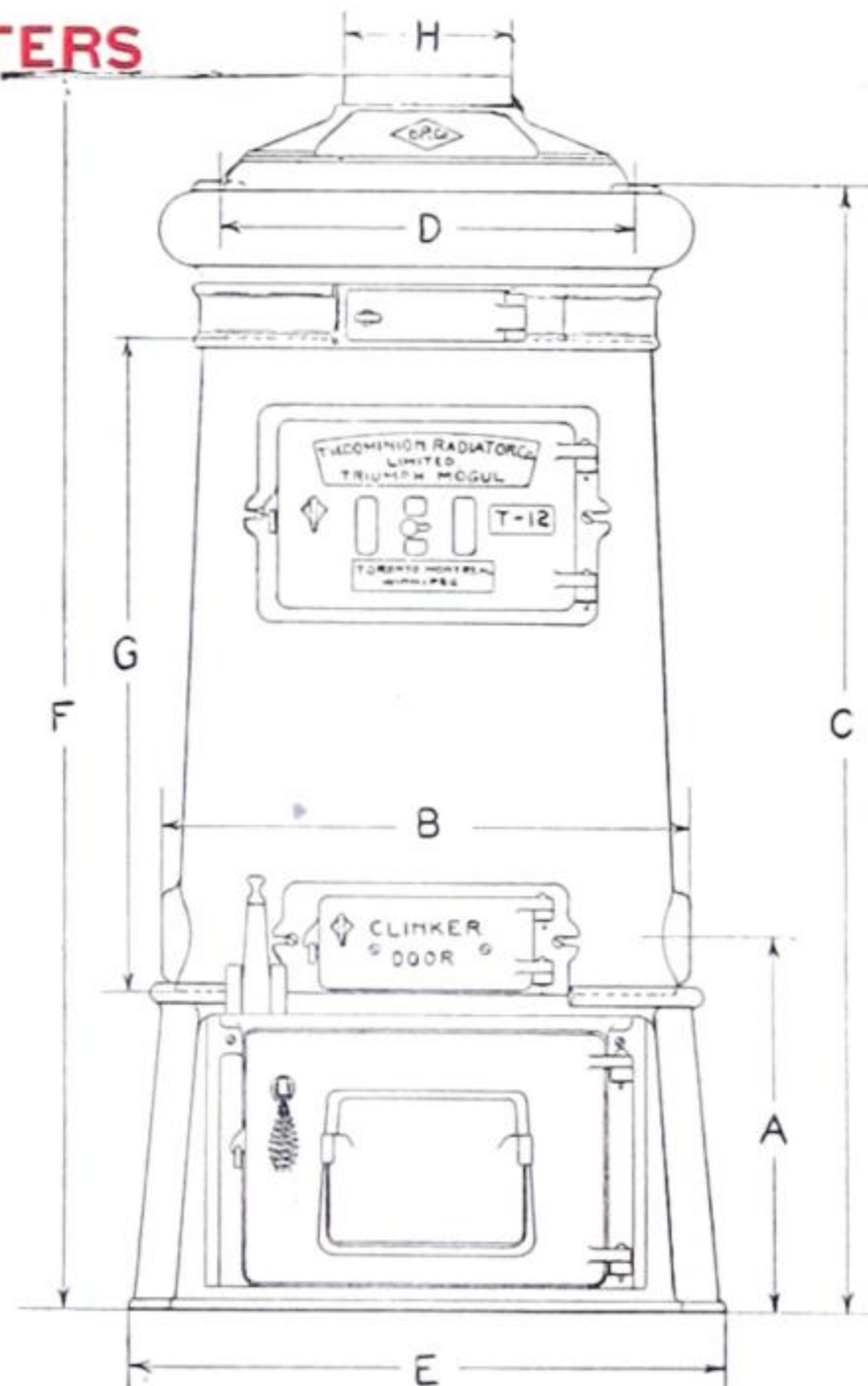
For measurements, see pages 66 and 70.

TRIUMPH MOGUL WATER HEATERS

T-101



T-10-20-30



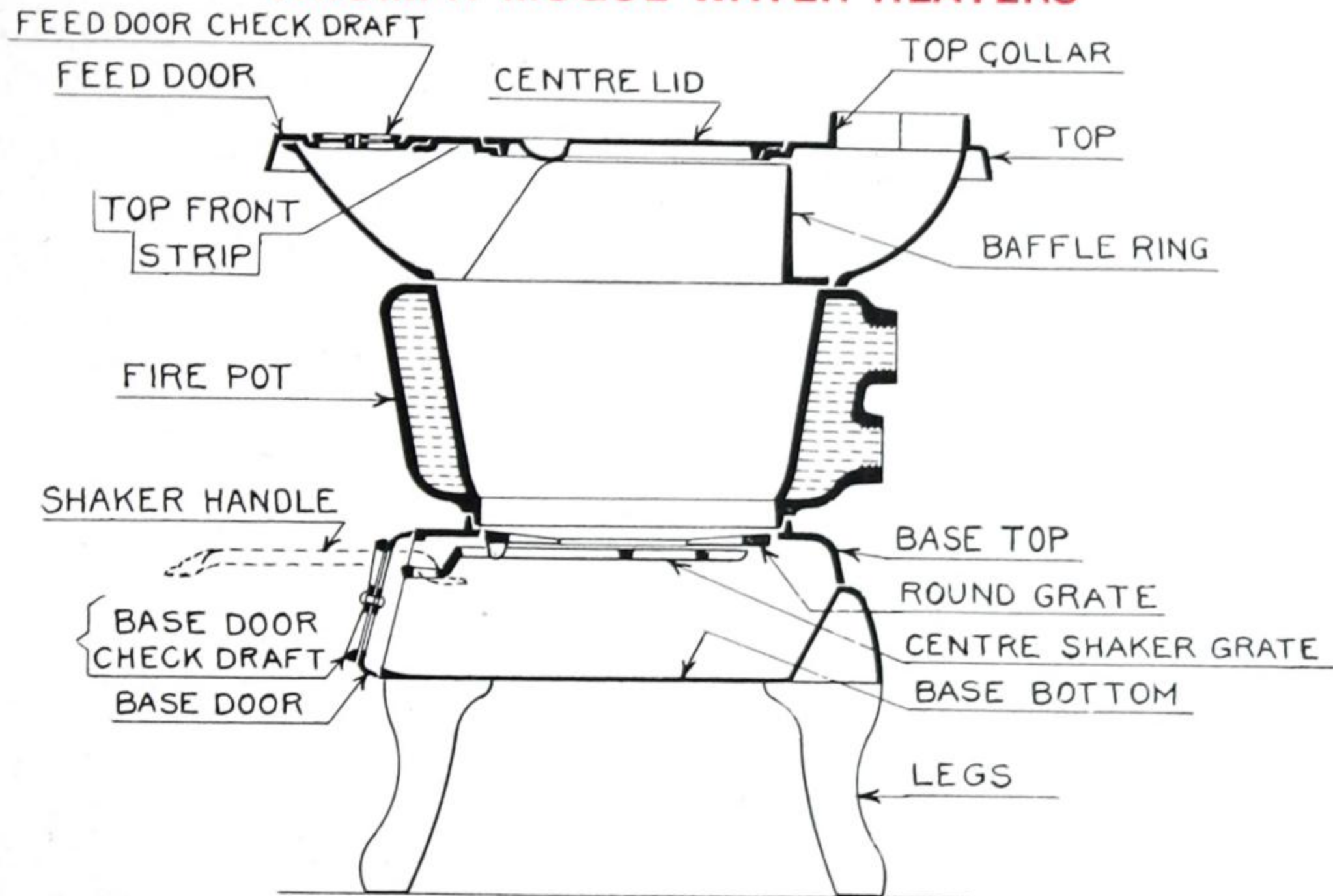
T-12-22-32

For measurements, see pages 66 and 70.

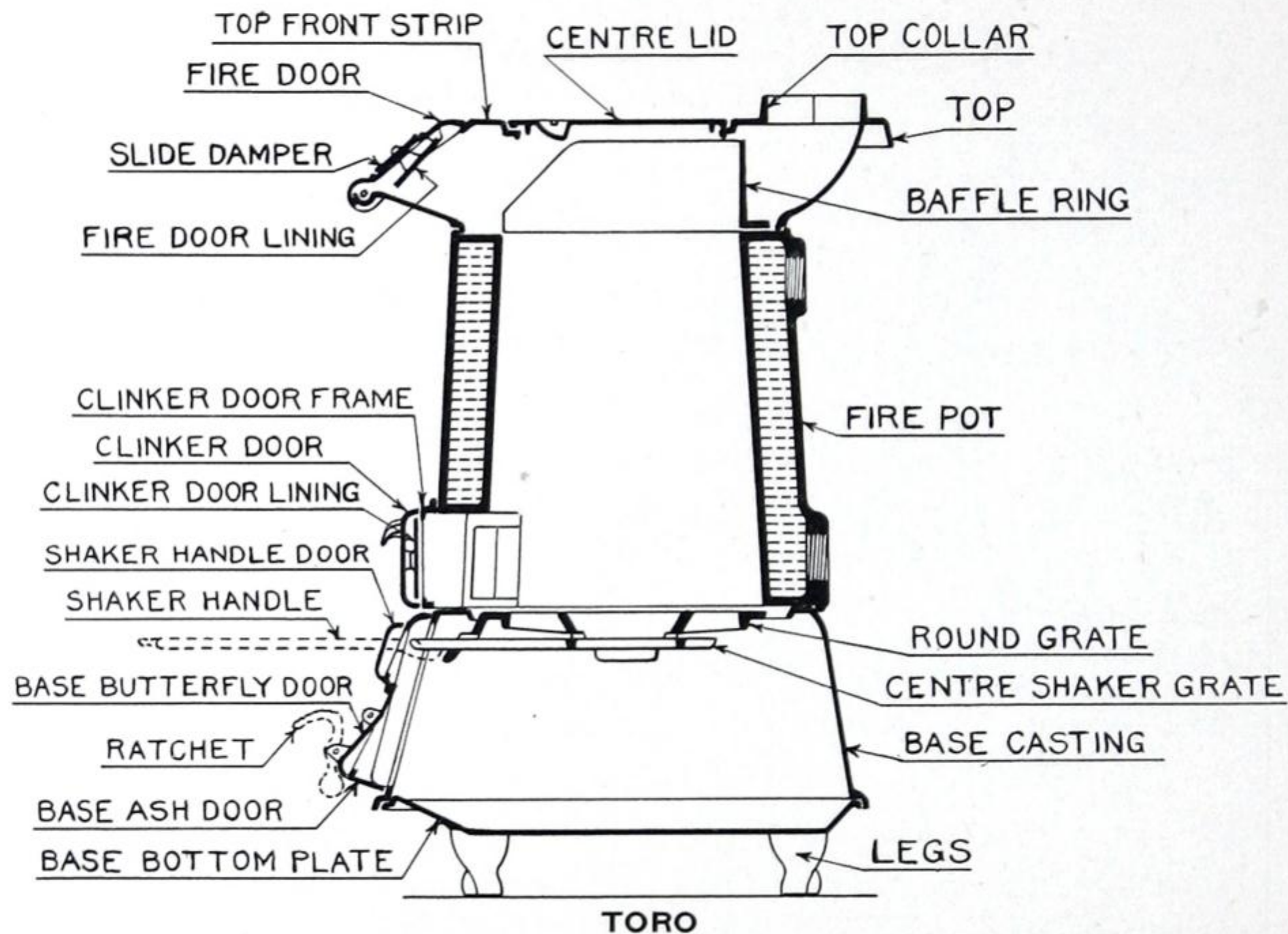
TRIUMPH MOGUL WATER HEATERS

MEASUREMENTS

Pattern	No.	A	B	C	D	E	F	G	H
Bronco.....	8	12 $\frac{3}{4}$	.....	2 $\frac{3}{4}$	.....	20	21 $\frac{1}{2}$	.....	.....
".....	9	12 $\frac{3}{4}$	.....	2 $\frac{3}{4}$	.....	21 $\frac{1}{2}$	21 $\frac{1}{2}$	.....	.....
Toro Laundry.....	8-D	12 $\frac{1}{2}$	.....	10 $\frac{1}{4}$	.....	20	30	.....	.....
".....	9-D	12 $\frac{1}{2}$	.....	10 $\frac{1}{4}$	.....	21 $\frac{1}{2}$	30	.....	.....
Triumph Mogul.....	00	15	.....	24 $\frac{1}{2}$	.....	18	28 $\frac{1}{2}$	13 $\frac{1}{2}$	5
" ".....	0	15	.....	31 $\frac{1}{2}$	.....	18	35	20 $\frac{1}{2}$	5
" ".....	101	12 $\frac{3}{4}$	.....	33	.....	18	37	22	5
" ".....	10	13 $\frac{1}{2}$	18 $\frac{1}{2}$	35 $\frac{1}{2}$	12	21	39 $\frac{1}{2}$	23 $\frac{3}{4}$	6
" ".....	12	13 $\frac{1}{2}$	18 $\frac{1}{2}$	40 $\frac{1}{2}$	14 $\frac{1}{2}$	21	44 $\frac{3}{4}$	23 $\frac{3}{4}$	6
" ".....	20	13 $\frac{3}{4}$	21	41 $\frac{1}{2}$	14 $\frac{3}{4}$	23	46 $\frac{1}{4}$	29 $\frac{1}{2}$	6
" ".....	22	13 $\frac{3}{4}$	21	47 $\frac{1}{2}$	16 $\frac{3}{4}$	23	52 $\frac{1}{4}$	29 $\frac{1}{2}$	6
" ".....	30	13 $\frac{3}{4}$	24 $\frac{1}{2}$	41 $\frac{1}{2}$	17	26	46 $\frac{1}{2}$	29 $\frac{1}{2}$	7
" ".....	32	13 $\frac{3}{4}$	24 $\frac{1}{2}$	48	17 $\frac{1}{2}$	26	52 $\frac{1}{2}$	29 $\frac{1}{2}$	7

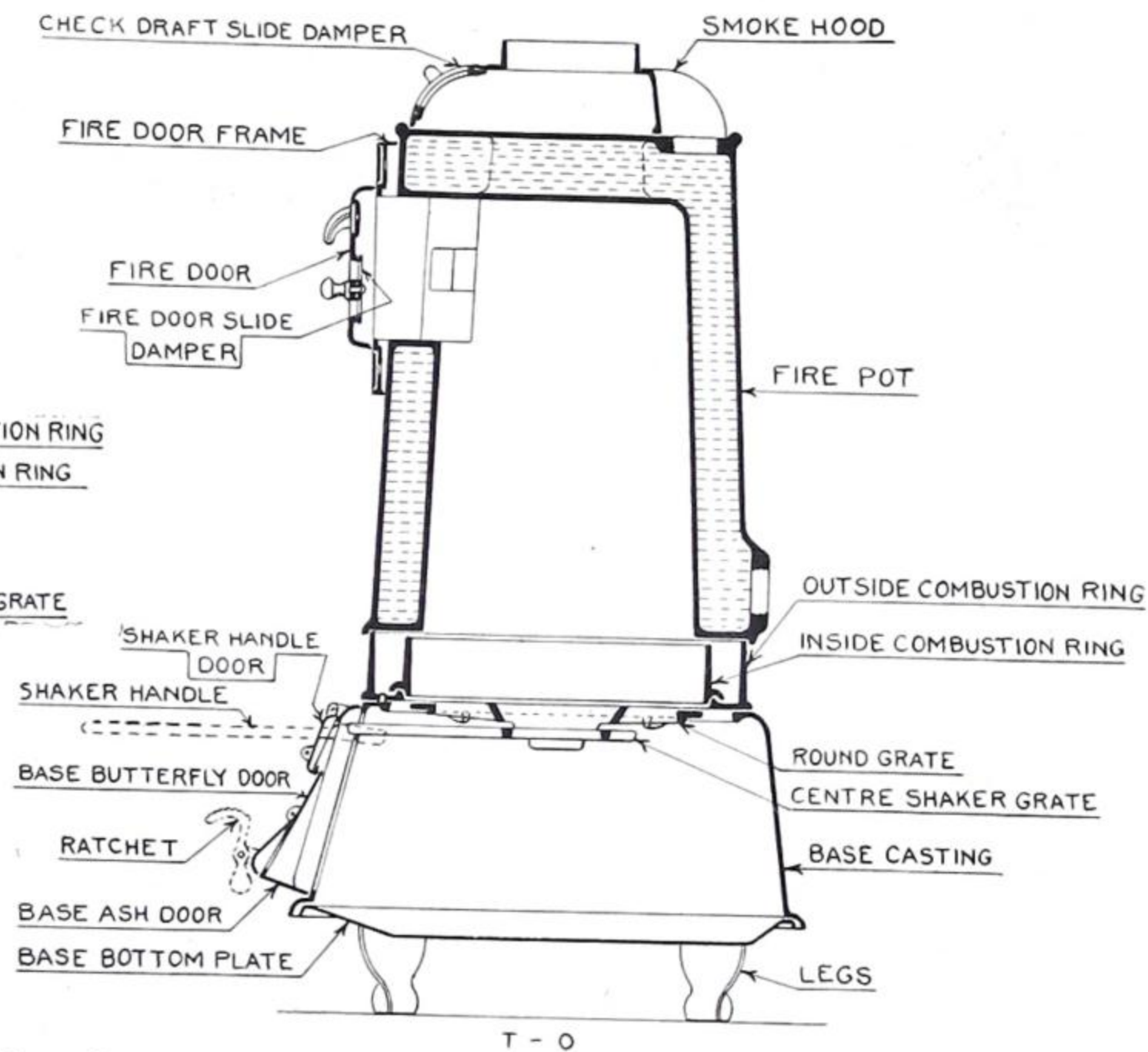
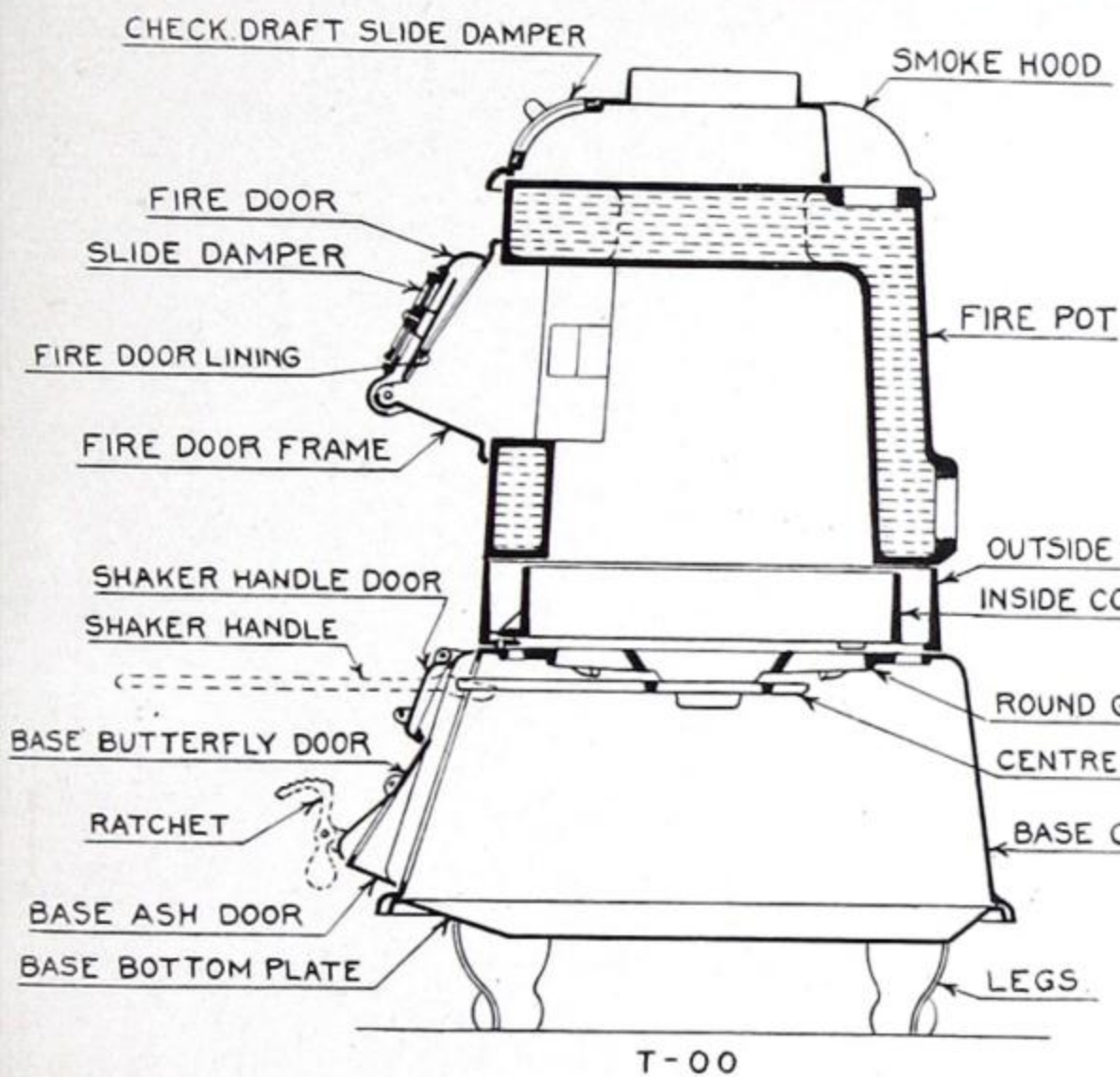
TRIUMPH MOGUL WATER HEATERS**BRONCO**

For names and list prices of repair parts, see pages 71 to 78.

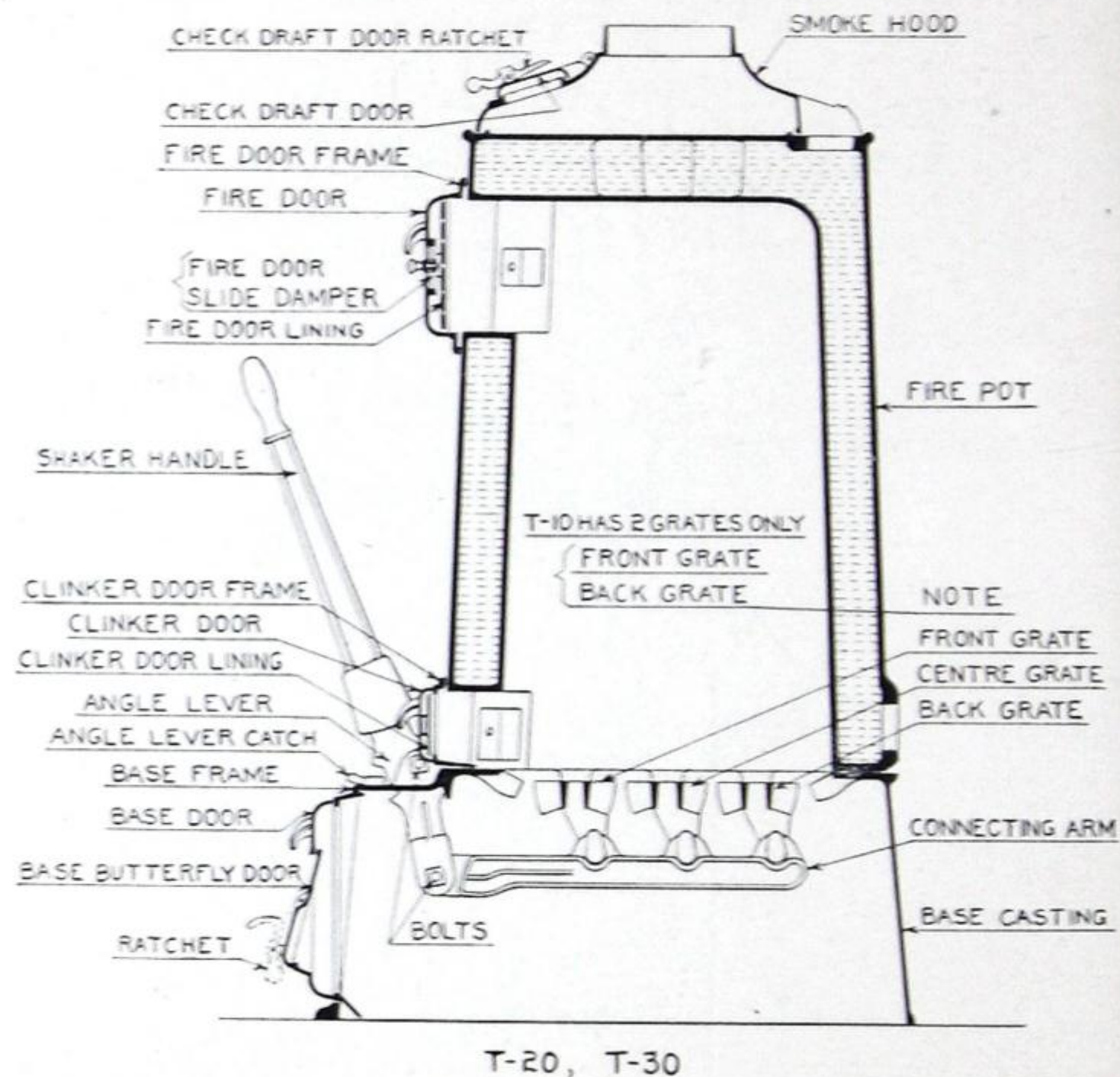
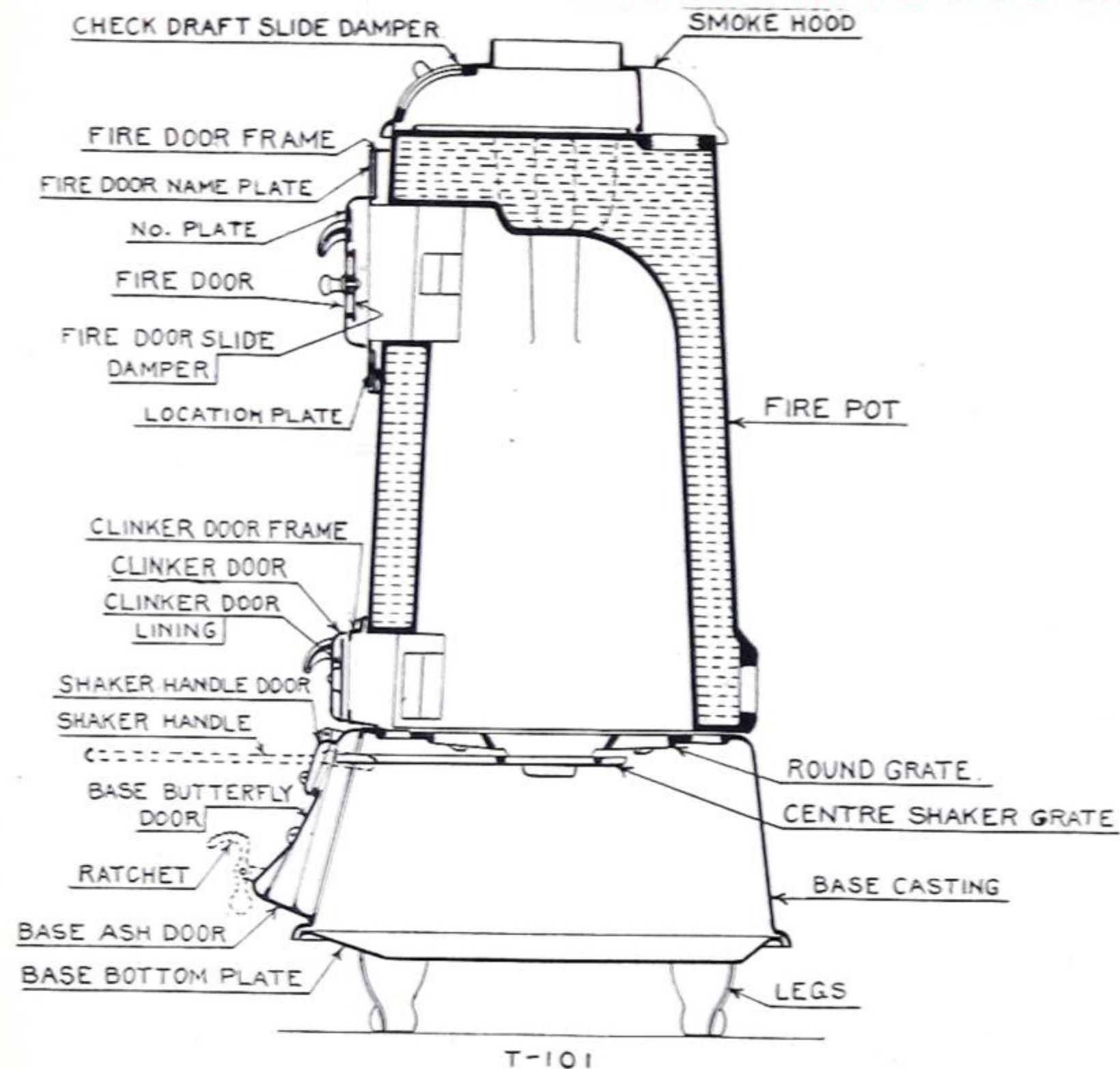
TRIUMPH MOGUL WATER HEATERS

For names and list prices of repair parts, see pages 71 to 78.

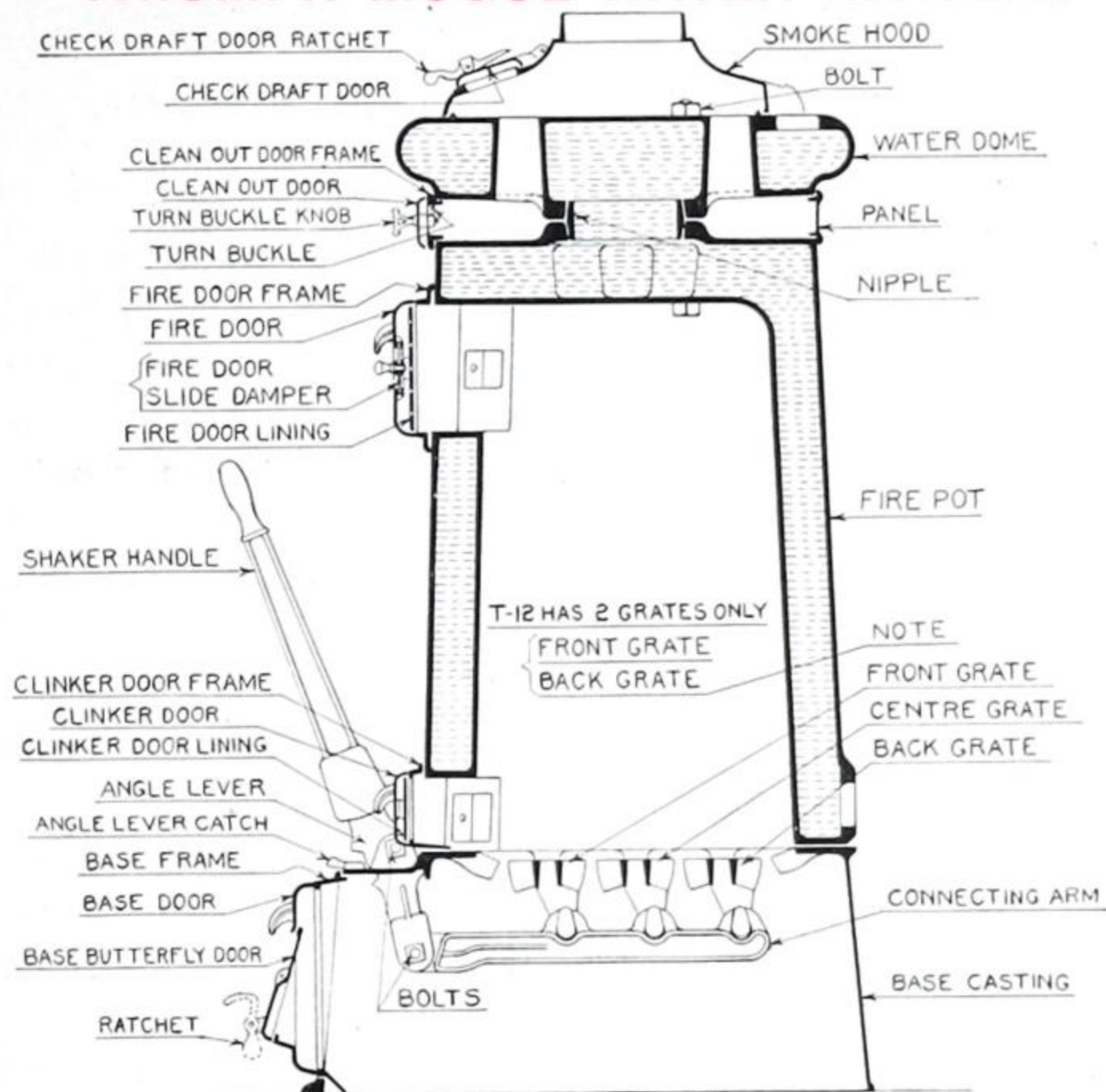
TRIUMPH MOGUL WATER HEATERS



For names and list prices of repair parts, see pages 71 to 78.

TRIUMPH-MOGUL WATER HEATERS

For names and list prices of repair parts, see pages 71 to 78.

TRIUMPH MOGUL WATER HEATERS

T-22, T-32

For names and list prices of repair parts, see pages 71 to 78.

TRIUMPH MOGUL WATER HEATERS

REPAIR PARTS, TRIUMPH MOGUL WATER HEATERS

Names and List Prices of Repair Parts

NO.	BRONCO LAUNDRY HEATER				TORO LAUNDRY HEATER			
	No. 8		No. 9		No. 8-D		No. 9-D	
Name of Part	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price
Fire Pot.....	13	\$9.00	13	\$9.00	1-L & T	\$14.00	1-L & T	\$14.00
Top.....	8-19	4.00	9-19	5.00	D8-2-L&T	4.00	D9-2-L & T	5.00
Top Collar.....	8-18	.40	9-18	.40	8-18	.40	9-18	.40
Top Front Strip.....	8-17	.40	9-17	.40	9-L & T	.40	9-L & T	.40
Centre.....	8-16	.40	9-16	.60	8-16	.40	9-16	.40
Feed or Fire Door.....	15	.40	15	.40	8-L & T	.50	8-L & T	.50
Feed Door Check Draft or Damper	No number	.20	No number	.20	.....	.20	.....	.20
Top Lids.....	8-14	.60 ea.	9-14	.60 ea.	8-14	.60	9-14	.60
Baffle Ring.....	No number	1.20	No number	1.20	.....	1.20	.....	1.20
Base (Top).....	12	1.20	12	1.20	D8-1½-15	5.00	D-9-1½-15	5.00
Base Bottom.....	11	3.40	11	3.40	D-9-1-15	2.60	D-9-1-15	2.60
Base Door (Ash).....	8	.40	8	.40	T-101-2-15	1.00	T-101-2-15	1.00
Base Door Check Draft.....	7	.20	7	.20	9-12-3-15	.20	9-12-3-15	.20
Legs (Four).....	5	.40 ea.	5	.40 ea.	.....	.20	.....	.20
Grate (Round).....	10	.65	10	.65	10-36-10	1.80	10-36-10	1.80
Centre Slide Grate.....	9	.15	9	.15	10-37-01	.35	10-37-01	.35
Grate Shaker Handle.....	6	.20	6	.20	.....	.20	.....	.20
Clinker Door.....	.....	.....	.....	.....	D-10-12-51-15	.40	.....	.40
Clinker Door Frame.....	.....	.....	.....	.....	D-10-52-15	.60	.....	.60
Clinker Door Lining.....	.....	.....	.....	.....	D-10-12-53-15	.20	.....	.20
Ratchet.....	.....	.20	.....	.20	.....	.20	.....	.20

TRIUMPH MOGUL WATER HEATERS**NAMES, PATTERN NUMBERS AND LIST PRICES OF REPAIR PARTS**

Name of Part	T-00—10" Grate		T-0—10" Grate		T-101—10" Grate		T-10—12" Grate		T-12—12" Grate	
	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price
Fire Pot.....	T-00-30-15...	\$16.00	T-0-30-15...	\$25.00	T-101-30-15...	\$31.00	T-10-30-15...	\$48.00	T-12-30-15...	\$48.00
Fire Door.....	D-00-11-10...	.60	D-10-13-15...	.60	D-10-13-15...	.60	D-12-15-15...	.80	D-12-15-15...	.80
Fire Door Frame.....	D-00-10-10...	.80	D-10-12½-15	1.00	D-10-12½-15...	1.00	D-12-15...	2.20	D-12-15...	2.20
Fire Door Slide Damper.....			D-18½-22-15	.20	D-18½-22-15...	.20	D-18½-22-15...	.20	D-18½-22-15...	.20
Fire Door Lining.....	D-00-12-10...	.20								
Inside Combustion Ring.....	no number	1.20	no number	2.20						
Outside Combustion Ring.....		2.00		2.40						
Clinker Door.....					D-10-12-51-15	.40	D-12-20-15...	.40	D-12-20-15...	.40
Clinker Door Frame.....					D-10-52-15...	.60	D-12-21-15...	.80	D-12-21-15...	.80
Clinker Door Lining.....					D-10-12-53-15	.20	D-15-18-53-15	.20	D-15-18-53-15	.20
Base Bottom Plate.....	D-9-1-15...	2.60	D-9-1-15...	2.60	D-9-1-15...	2.60	T-12-1-15...	10.00	T-12-1-15...	10.00
Base Casting.....	D-9-1½-15...	5.00	D-9-1½-15...	5.00	D-9-1½-15...	5.00	T-12-2-15...	17.00	T-12-2-15...	17.00
Base Legs.....	No number...	ea 20	No number...	ea 20	No number...	ea 20				
Base Front Frame.....							T-12-3-15...	1.20	T-12-3-15...	1.20
Base Door.....	D-9-2-15...	1.00	D-9-2-15...	1.00	T-101-2-15...	1.00	T-12-4-15...	1.40	T-12-4-15...	1.40
Base Butterfly Door.....	9-12-3-15...	.20	9-12-3-15...	.20	9-12-3-15...	.20	1-2M-513...	.60	1-2-M-513...	.60
Base Butterfly Door Ratchet.....	No number...	.20	No number...	.20	No number...	.20	No number...	.20	No number...	.20
Base Shaker Handle Door.....	D-12-15...	.20	D-12-15...	.20	T-101-12-15...	.20				
Base Shaker Handle.....	10-42-10...	.20	10-42-10...	.20	10-42-10...	.20	1-2-3-4M-7-13	1.00	1-2-3-4M-7-13	1.00
Base Angle Lever.....							1-M-6-13...	.80	1-M-6-13...	.80
Base Angle Lever Catch.....							S-25-107...	.20	S-25-107...	.20
Grate Connecting Arm.....							T-12-8-15...	1.00	T-12-8-15...	1.00
Grate (Round).....	10-36-10...	1.80	10-36-10...	1.80	10-36-10...	1.80				
Centre Shaker Grate.....	10-37-01...	.35	10-37-01...	.35	10-37-01...	.35				
Front Grate Bar.....							D-12-9-15...	1.50	D-12-9-15...	1.50
Centre Grate Bar.....										
Back Grate Bar.....							D-12-12-15...	1.50	D-12-12-15...	1.50
Water Dome.....										
Nipple.....									T-12-31-15...	14.00
Clean-Out Door.....									4 inch...	.40
Clean-Out Frame.....									D-12-22¼-15...	.20
Clean-Out Panel.....									D-12-22¾-15...	.20
Smoke-Hood.....	D-10-18½-15	.80	D-9-18½-15...	1.20	D-10-18½-15...	1.20	D-10-18½-15...	2.40	D-12-18½-15...	2.40
Smoke-Hood Check Draft Door.....							D-12-19½-15...	.40	D-12-19½-15...	.40
Smoke-Hood Slide Damper.....	D-10-19-15...	.20	D-10-19-15...	.20	D-10-19-15...	.20				
Location Name Plate.....			No number...	.20	No number...	.20	No number...	.20	No number...	.20
Company Name Plate.....				.20		.20		.20		.20

TRIUMPH MOGUL WATER HEATERS**NAMES, PATTERN NUMBERS AND LIST PRICES OF REPAIR PARTS**

Name of Part	T-20—15" Grate		T-22—15" Grate		T-30—18" Grate		T-32—18" Grate	
	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price	No. of Pattern	Price
Fire Pot.....	T-20-30-15....	\$70.00	T-22-30-15....	\$70.00	T-30-30-15....	\$98.00	T-32-30-15....	\$98.00
Fire Door.....	D-12-15-15....	.80	D-12-15-15....	.80	D-12-15-15....	.80	D-12-15-15....	.80
Fire Door Frame.....	T-15-15-15....	2.20	T-15-15-15....	2.20	T-18-15-16....	2.40	T-18-15-16....	2.40
Fire Door Slide Damper.....	D-18½-22-15..	.20	D-18½-22-15..	.20	D-18½-22-15..	.10	D-18½-22-15..	.20
Fire Door Lining.....								
Inside Combustion Ring.....								
Outside Combustion Ring.....								
Clinker Door.....	D-12-20-15....	.40	D-12-20-15....	.40	D-12-20-15....	.40	D-12-20-15....	.40
Clinker Door Frame.....	T-15-19-15....	.80	T-15-19-15....	.80	T-18-19-16....	1.00	T-18-19-16....	1.00
Clinker Door Lining.....	D-15-18-53-15	.20	D-15-18-53-15	.20	D-15-18-53-15	.20	D-15-18-53-15	.20
Base Bottom Plate.....	1M-1-13.....	10.40	1-M-1-13.....	10.40	2M-1-13.....	12.00	2-M-1-13.....	12.00
Base Casting.....	T-15-2-15....	18.00	T-15-2-15....	18.00	T-18-2-15....	22.00	T-18-2-15....	22.00
Base Legs.....								
Base Front Frame.....	1 & 2M-3-13..	1.40	1 & 2M-3-13..	1.40	1 & 2M-3-13..	1.40	1 & 2M-3-13..	1.40
Base Door.....	1 & 2M-4-13..	1.60	1 & 2M-4-13..	1.60	1 & 2M-4-13..	1.60	1 & 2M-4-13..	1.60
Base Butterfly Door.....	1 & 2M-5-13..	.60	1 & 2M-5-13..	.60	1 & 2M-5-13..	.60	1 & 2M-5-13..	.60
Base Butterfly Door Ratchet.....	No number....	.20	No number....	.20	No number....	.20	No number....	.20
Base Shaker Handle Door.....								
Base Shaker Handle.....	1-2-3-4M-7-13	1.00	1-2-3-4-M-7-13	1.00	1-2-3-4M-7-13..	1.00	1-2-3-4M-7-13..	1.00
Base Angle Lever.....	1-M-6-13.....	.80	1-M-6-13.....	.80	1-M-6-13.....	.80	1-M-6-13.....	.80
Base Angle Lever Catch.....	S-25-107.....	.20	S-25-107.....	.20	S-25-107.....	.20	S-25-107.....	.20
Grate Connecting Arm.....	T-15-8-15....	1.20	T-15-8-15....	1.20	2-M-8-13.....	1.20	2-M-8-13.....	1.20
Grate (Round).....								
Centre Shaker Grate.....								
Front Grate Bar.....	T-15-9-15....	1.75	T-15-9-15....	1.75	S-19-101.....	2.25	S-19-101.....	2.25
Centre Grate Bar.....	T-15-10-15....	2.25	T-15-10-15....	2.25	S-19-102.....	2.75	S-19-102.....	2.75
Back Grate Bar.....	T-15-11-15....	1.75	T-15-11-15....	1.75	S-19-104.....	2.25	S-19-104.....	2.25
Water Dome.....			T-22-31-15....	18.00			T-32-31-15....	25.00
Nipple.....			5 inch.....	.60			5 inch.....	.60
Clean-Out Door.....			T-15-22¼-15..	.20			T-18-22¼-16..	.20
Clean-Out Frame.....			T-15-22¾-15..	.60			T-18-22¾-16..	.60
Clean-Out Panel.....			T-15-22½-15..	.60			T-18-22½-16..	.60
Smoke-Hood.....	T-15-24-15....	4.00	T-15-25-15....	4.00	T-18-24-16....	5.00	T-18-24-16....	5.00
Smoke-Hood Check Draft Door.....	T-15-26-15....	.80	T-15-26-15....	.40	T-15-26-15....	.40	T-15-26-15....	.40
Smoke-Hood Slide Damper.....								
Location Name Plate.....	No number....	.20	No number....	.20	No number....	.20	No number....	.20
Company Name Plate.....	".....	.20	".....	.20	".....	.20	".....	.20

SAFFORD-KEWANEE BRICK-SET FIREBOX BOILERS
SAFFORD-KEWANEE BRICK-SET SMOKELESS BOILERS
SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS
SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS
SAFFORD-KEWANEE WATER HEATING GARBAGE BURNERS
SAFFORD-KEWANEE TANKS AND WATER-HEATERS

Information required for ordering Boilers and Boiler Repairs, see page 116

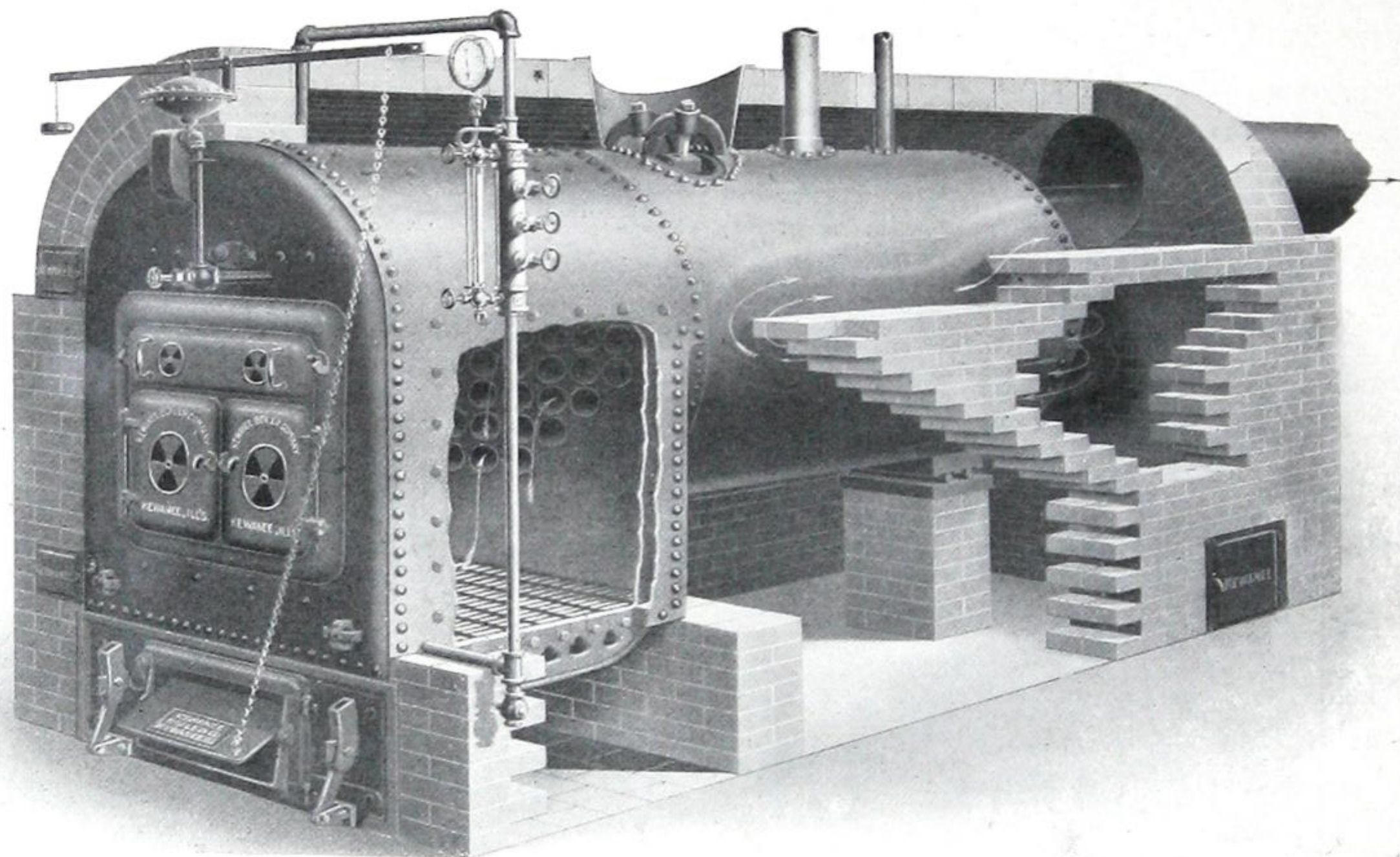
THE

DOMINION RADIATOR COMPANY
LIMITED

St. John Montreal Hamilton TORONTO Winnipeg Calgary Vancouver

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SAFFORD-KEWANEE BRICK-SET FIREBOX BOILERS



Cut shows Boiler erected, with portion of brick work removed.

For specifications, list prices, etc., see following pages.

Ash-Pit 14 inches high on Boilers No. 00 to No. 14 inclusive. 17 inches high on other sizes.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SPECIFICATIONS AND PRICE LIST SAFFORD-KEWANEE BRICK-SET FIREBOX BOILERS

These Boilers will heat all the radiation shown by their rated capacity

Number.....	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Capacity, Steam...square feet	500	700	900	1000	1200	1400	1700	2000	2200	2500	3000	3500	4000	4500	5200	6200	7000	8500	9500	10500	11500	13000
Capacity, Water...square feet	800	1100	1500	1600	2000	2300	2800	3300	3600	4100	4900	5700	6500	7300	8500	10100	11400	14000	15500	17100	18700	21200
Model, Steam Boiler Complete	Dandy	Date	Dagon	Daft	Daub	Dawn	Dairy	Damp	Dark	Dash	Data	Dated	Dead	Dear	Debut	Defer	Devil	Deist	Delve	Demit	Dense	Dart
Model, Water Boiler Complete	Deal	Deny	Dirty	Deter	Dingy	Dirge	Darn	Debar	Dish	Drill	Draft	Dregs	Drink	Debit	Decay	Dusk	Decot	Decry	Deflux	Delta	Demon	Dental
Price Steam Boiler, Castings and Tools.....	\$255	\$270	\$285	\$300	\$320	\$375	\$400	\$435	\$460	\$510	\$560	\$630	\$680	\$735	\$860	\$935	\$1200	\$1310	\$1500	\$1600	\$1800	\$2000
Steam Trimmings.....	18	18	18	18	19	19	19	19	23	23	23	23	23	28	28	28	40	40	40	40	44	44
Price Water Boiler Castings and Tools.....	\$265	\$280	\$295	\$310	\$330	\$390	\$415	\$450	\$475	\$525	\$575	\$645	\$695	\$755	\$880	\$955	\$1225	\$1335	\$1530	\$1630	\$1840	\$2040
Approximate Weight..pounds	1800	2200	2700	2900	3200	3700	4200	4600	4800	5400	5900	6800	7400	8100	10300	11500	14200	15600	17000	18600	19800	21600

Extras and Changes—add to above List

Longer Shell, each foot or fraction of a foot.....	\$11	\$11	\$15	\$15	\$15	\$19	\$19	\$19	\$23	\$23	\$23	\$32	\$32	\$32	\$40	\$40	\$50	\$50	\$60	\$60	\$70	\$70
Longer Firebox, including grate, each six inches.....	\$15	\$15	\$20	\$20	\$20	\$25	\$25	\$25	\$30	\$30	\$30	\$40	\$40	\$40	\$45	\$45	\$55	\$55	\$65	\$65	\$80	\$80
Bought iron space rings and extra stays and braces for 100 lbs. working pressure..	\$30	\$30	\$33	\$33	\$34	\$36	\$37	\$38	\$42	\$45	\$47	\$50	\$52	\$53	\$66	\$71	\$80	\$85	\$90	\$95	\$105	\$110
For flue Clean-out Doors and frame.....	\$12	\$12	\$12	\$12	\$12	\$16	\$16	\$16	\$18	\$18	\$18	\$22	\$22	\$22	\$26	\$26	\$32	\$32	\$38	\$38	\$46	\$46

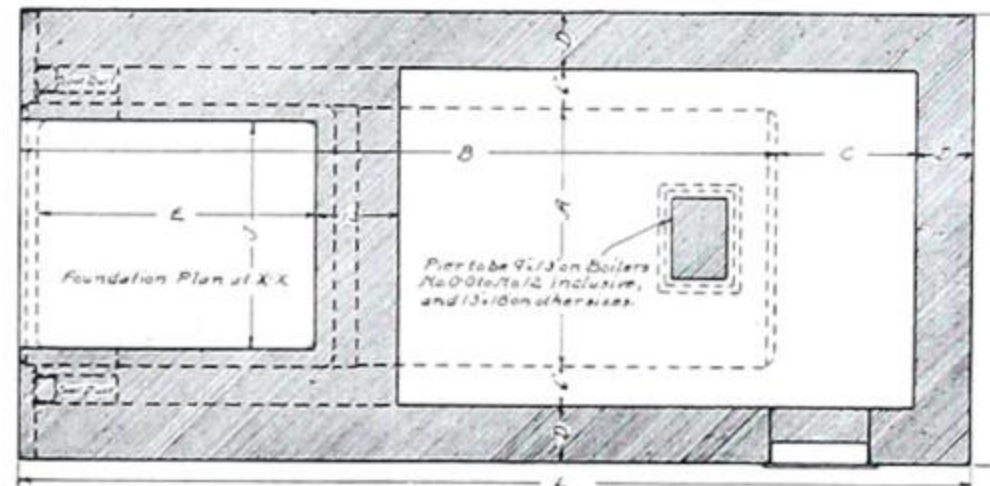
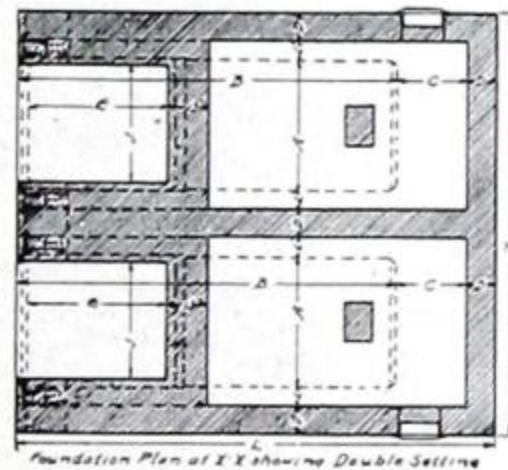
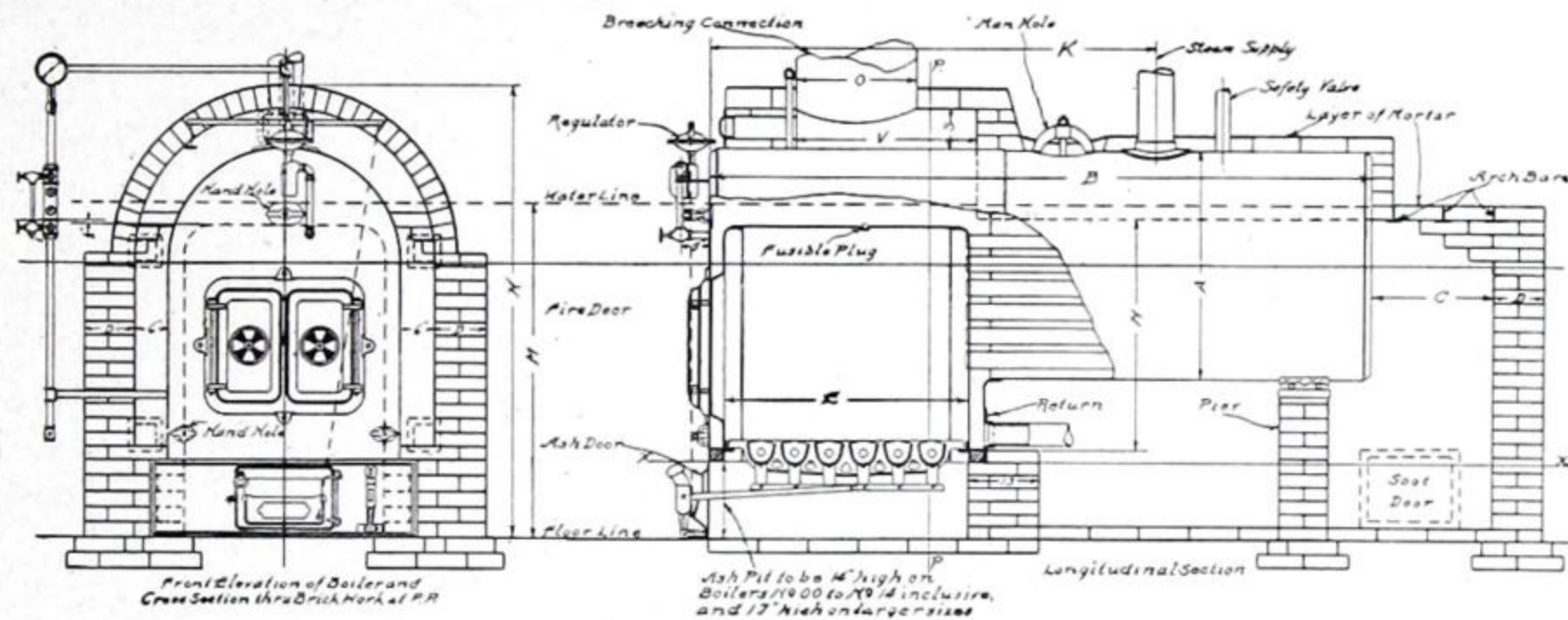
Openings in firebox for coil, \$4.00 list per Boiler.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS**ADDITIONAL SPECIFICATIONS SAFFORD-KEWANEE BRICK-SET FIREBOX BOILERS**

Number.....	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Diameter Boiler.....inches	24	24	30	30	30	36	36	36	42	42	42	48	48	48	54	54	60	60	66	66	72	72
Length Boiler over all.....feet	5½	7½	6½	7½	8½	7½	9	10½	8½	10	11½	10½	12	13½	14	16½	15½	18	16	18	16	18
Width of Firebox.....inches	19	19	24	24	24	30	30	30	36	36	36	42	42	42	48	48	53	53	59	59	65	65
Length of Firebox.....inches	20	26	26	32	38	32	38	44	38	44	50	44	50	56	56	62	62	68	62	68	68	74
Height of Firebox.....inches	30	30	35	35	35	41	41	41	43	43	43	47	47	47	49	49	54	54	59	59	64	64
Heating Surface.....square feet	74	98	116	131	145	190	224	260	257	299	344	390	442	495	585	700	733	862	971	1097	1167	1325
Square feet of Steam capacity as rated for each square foot of heating surface.....	6.8	7.1	7.7	7.6	8.2	7.3	7.6	7.7	8.5	8.3	8.7	8.9	9.0	9.0	8.9	8.8	9.5	9.8	9.8	9.5	9.8	9.8
Area of Grate.....square feet	2.6	3.4	4.3	5.3	6.3	6.7	8.0	9.2	9.5	11.0	12.5	12.8	14.6	16.3	18.7	20.6	22.8	25.0	25.4	28.0	30.7	33.4
Square feet of heating surface for each square foot of grate.....	28	29	27	25	23	28	28	28	27	27	28	30	30	30	31	34	32	34	38	39	38	40
Diameter of Breeching.....inches	10	10	12	14	16	16	18	18	20	20	22	22	24	24	28	28	32	32	32	32	36	36
Diameter of Stack.....inches	10	10	12	12	14	14	16	16	18	18	20	20	22	22	26	26	30	30	30	30	34	34
Minimum height of Stack.....feet	40	40	40	40	40	40	40	45	45	45	45	45	50	50	50	50	55	55	60	60	60	60
Diameter of Stack for 2 Boilers, inches	.....	.....	.....	.....	.....	.....	.....	.....	24	26	28	28	30	32	34	34	36	36	36	38	40	42
Minimum height of Stack for 2 Boilers.....feet	.....	.....	.....	.....	.....	.....	.....	.....	50	50	50	50	50	50	55	60	60	70	70	70	70	70
Size of Steam opening (one)....inches	2½	2½	3	3	4	4	4	4	6	6	6	6	6	7	7	7	7	7	8	8	8	8
Size of Return (one).....inches	2	2	2½	2½	3	3	3	3	4	4	4	4	4	5	5	5	5	5	6	6	6	6
Size of Safety Valve.....inches	1½	2	2	2	2½	2½	2½	3	3	3	3½	3½	3½	3½	4	4	2-3	2-3½	2-3½	2-3½	2-3½	2-4
Number and size of Supply and Re- turn openings for Water....inches	1-4	1-4	1-6	1-6	1-6	1-6	1-6	1-6	2-5	2-6	2-6	2-6	2-6	2-7	2-7	2-7	2-7	2-8	2-8	2-10	2-10	2-10
Height of Water line.....inches	48	48	53	53	53	59	59	59	61	61	61	65	65	65	67	67	75	75	80	80	85	85
Height from floor to top of brick work.....inches	64	64	70	70	70	77	77	77	83	83	83	90	90	90	96	96	108	108	114	114	120	120

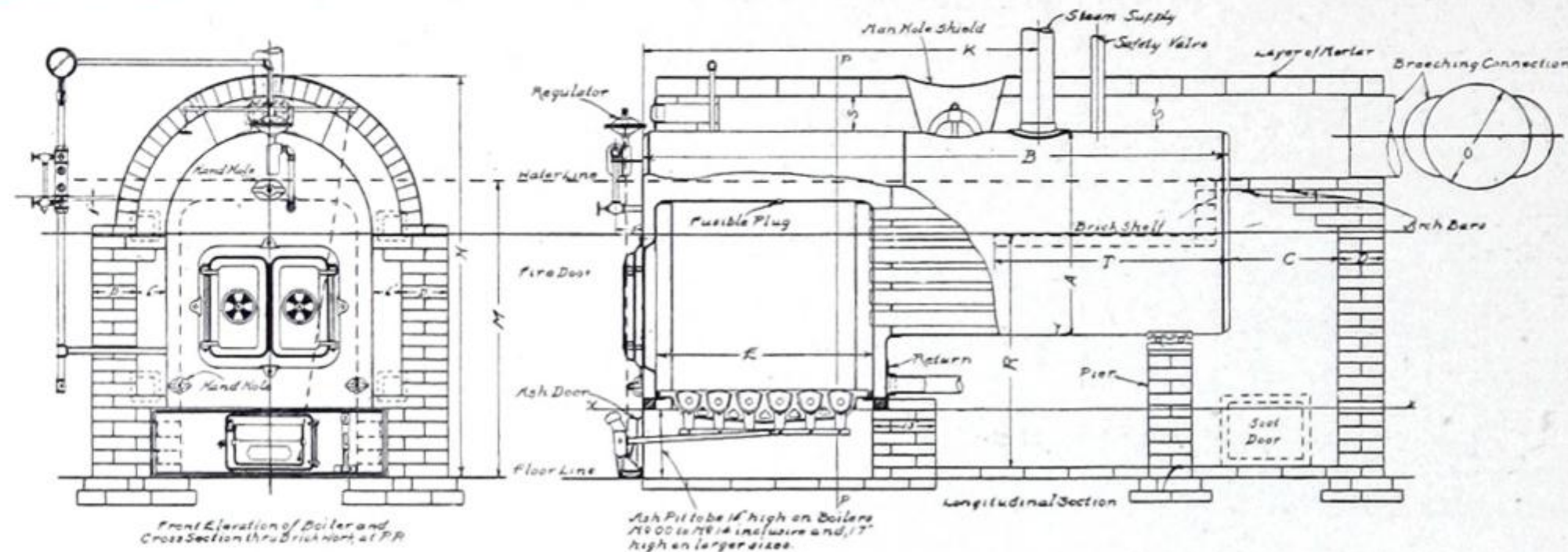
For Setting Plans and other measurements, see pages 83 and 84.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS



Section Firebox Boiler Showing Setting of Safford-Kewanee Brick-Set Firebox Boilers. Stack Connection at Front.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

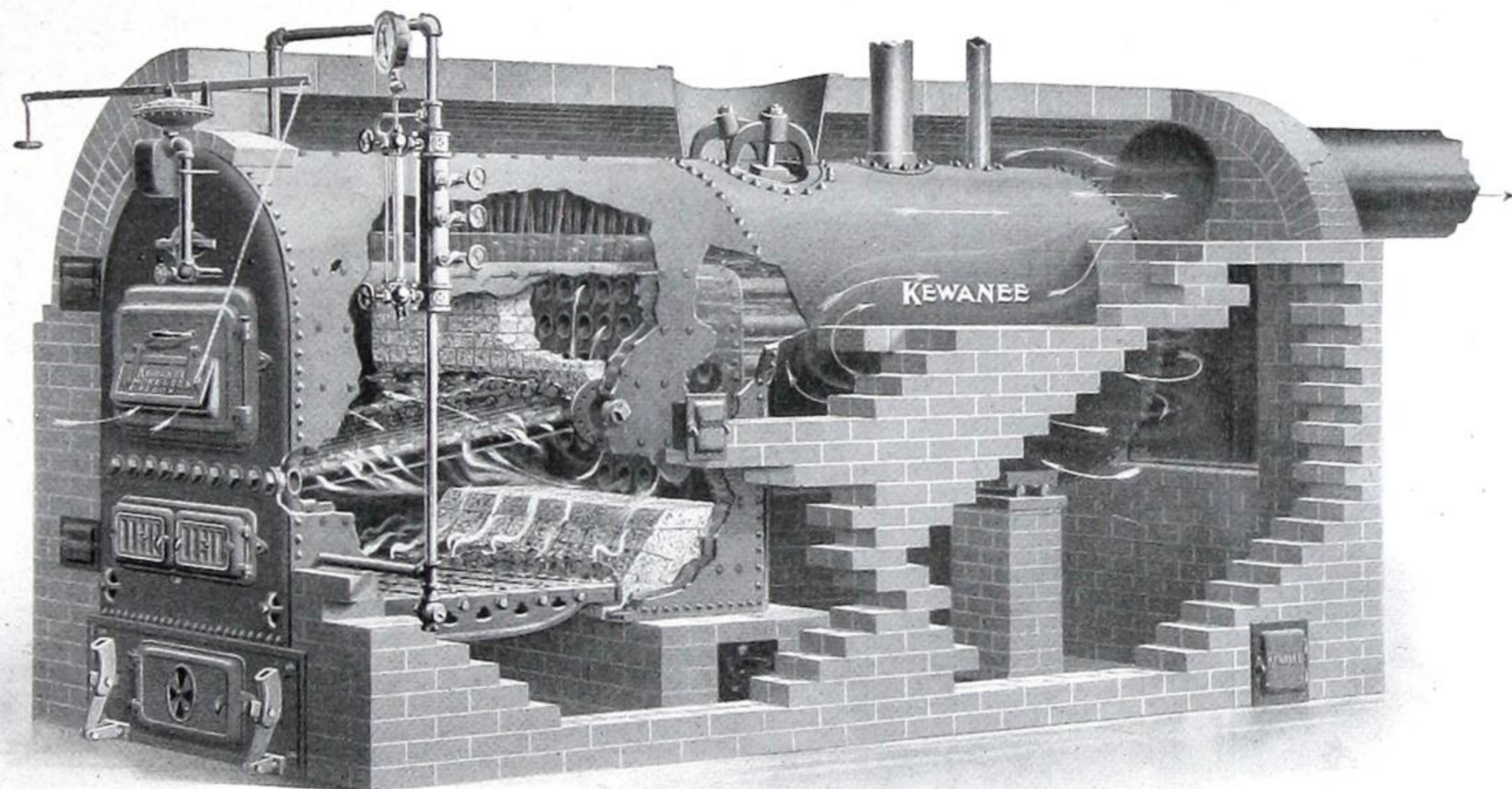


**Section of Firebox Boiler showing Setting of Safford-Kewanee Brick-set
Firebox Boilers. Stack Connection at Rear.**

	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Diameter Boiler "A"...inches	24	24	30	30	30	36	36	36	42	42	42	48	48	48	54	54	60	60	66	66	72	72
Length Boiler "B".....feet	5½	7½	6½	7½	8½	7½	9	10½	8½	10	11½	10½	12	13½	14	16½	15½	18	16	18	16	18
Rear Space "C".....inches	14	14	17	17	17	17	17	17	22	22	22	22	22	22	24	24	24	24	24	24	28	28
Thickness Wall "D"...inches	9	9	9	9	9	9	9	9	9	9	9	9	9	9	13	13	13	13	13	13	13	13
Length Grate "E".....inches	20	26	26	32	38	32	38	44	38	44	50	44	50	56	56	62	62	68	62	68	68	74
Width Ash-Pit "J"...inches	19	19	25	25	25	31	31	31	37	37	37	43	43	43	49	49	54	54	60	60	66	66
Total Height "H".....inches	64	64	70	70	70	77	77	77	83	83	83	90	90	90	96	96	108	108	114	114	120	120
Location Supply "K"...inches	17	30	21	24	31	12	20	29	16	28	34	30	43	43	48	54	49	62	41	55	45	53
Flue Space "S".....inches	6	6	6	6	6	7	7	7	7	7	7	8	8	8	8	8	10	10	10	10	10	10
Total Length "L"...feet, ins.	7-5	9-5	8-8	9-8	10-8	9-8	11-2	12-8	11-1	12-7	14-1	13-1	14-7	16-1	17-1	19-7	18-7	21-1	19-1	21-1	19-5	21-5
Total Width "W"...feet, ins.	4-6	4-6	5-0	5-0	5-0	5-6	5-6	5-6	6-0	6-0	6-0	6-6	6-6	6-6	7-8	7-8	8-2	8-2	8-8	8-8	9-2	9-2
Total Width "R"...feet, ins.	8-3	8-3	9-3	9-3	9-3	10-3	10-3	10-3	11-3	11-3	11-3	12-3	12-3	12-3	14-3	14-3	15-3	15-3	16-3	16-3	17-3	17-3
Common Brick for one Boiler.	1400	1500	1600	1700	1800	2000	2300	2400	2500	2800	3000	3200	3500	3700	5500	5700	6000	6500	6700	7100	7500	8000
Common Brick for two Boilers	2500	2600	2800	3000	3100	3500	4000	4100	4400	4900	5000	5500	6000	6400	9600	10000	10500	11300	11600	12400	13000	14000

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SAFFORD-KEWANEE BRICK-SET SMOKELESS FIREBOX BOILERS



Cut shows Boiler erected, with portion of brick-work removed. For specifications, list prices, etc., see following pages.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SPECIFICATIONS AND PRICE LIST—SAFFORD-KEWANEE BRICK-SET SMOKELESS FIREBOX BOILERS

These Boilers will heat all the radiation shown by their capacity

Number.....	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Capacity, Steam, sq.ft.	1600	1900	2200	2500	2900	3300	3800	4400	5000	5800	7000	8200	9500	10500	12000	13000	15000
Capacity, Water, sq.ft.	2600	3100	3600	4100	4700	5300	6200	7200	8200	9500	11400	13400	15500	17000	19600	21000	24500
Code, Steam Boiler, complete.....	Heal	Heap	Hear	Heck	Heed	Help	Hern	Hen	Henna	Herd	Herf	Herp	Herg	Hero	Herod	Heron	Hery
Code, Water Boiler, complete.....	Hide	Hie	Hill	Hind	Hinge	Hint	Hip	Hire	Hisk	Hiss	Hit	Hitch	Hive	Hiz	Hilt	Hing	Hick
Price Steam Boiler with Castings and Tools.....	\$590	\$620	\$654	\$710	\$770	\$840	\$940	\$1000	\$1064	\$1300	\$1400	\$1700	\$1850	\$2050	\$2260	\$2550	\$2800
Steam Trimmings....	20	20	20	24	24	24	24	24	30	30	30	40	40	40	40	44	44
Price Water Boiler with Castings and Tools.....	\$605	\$635	\$670	\$725	\$785	\$855	\$955	\$1015	\$1084	\$1320	\$1420	\$1725	\$1875	\$2080	\$2290	\$2590	\$2840
Approx. Weight, lbs..	4800	5200	5700	6100	6700	7200	8400	9100	9800	12300	13600	16000	17400	19400	21000	22400	24300

Extras and Changes—add to above list

For longer Shell, each foot or fraction of a foot.....	\$19	\$19	\$19	\$23	\$23	\$23	\$32	\$32	\$32	\$40	\$40	\$50	\$50	\$60	\$60	\$70	\$70
Wrought iron space rings and extra stays and braces for 100 lbs. working pressure	\$68	\$70	\$72	\$78	\$82	\$86	\$92	\$96	\$100	\$115	\$125	\$90	\$100	\$105	\$115	\$125	\$135

Openings in Firebox for coil, \$4.00 list per Boiler.

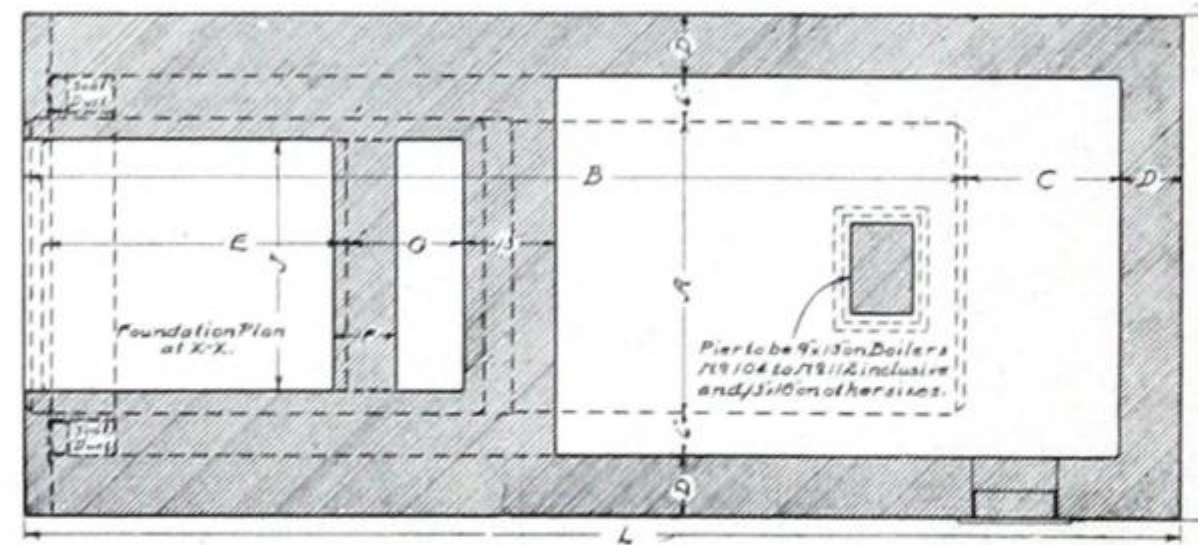
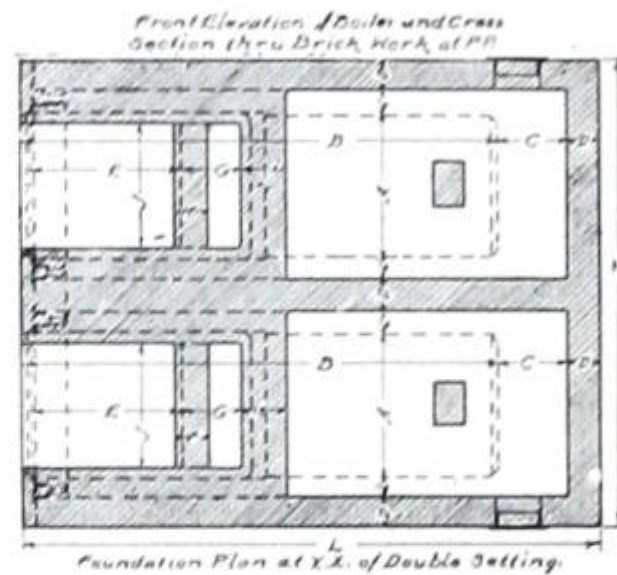
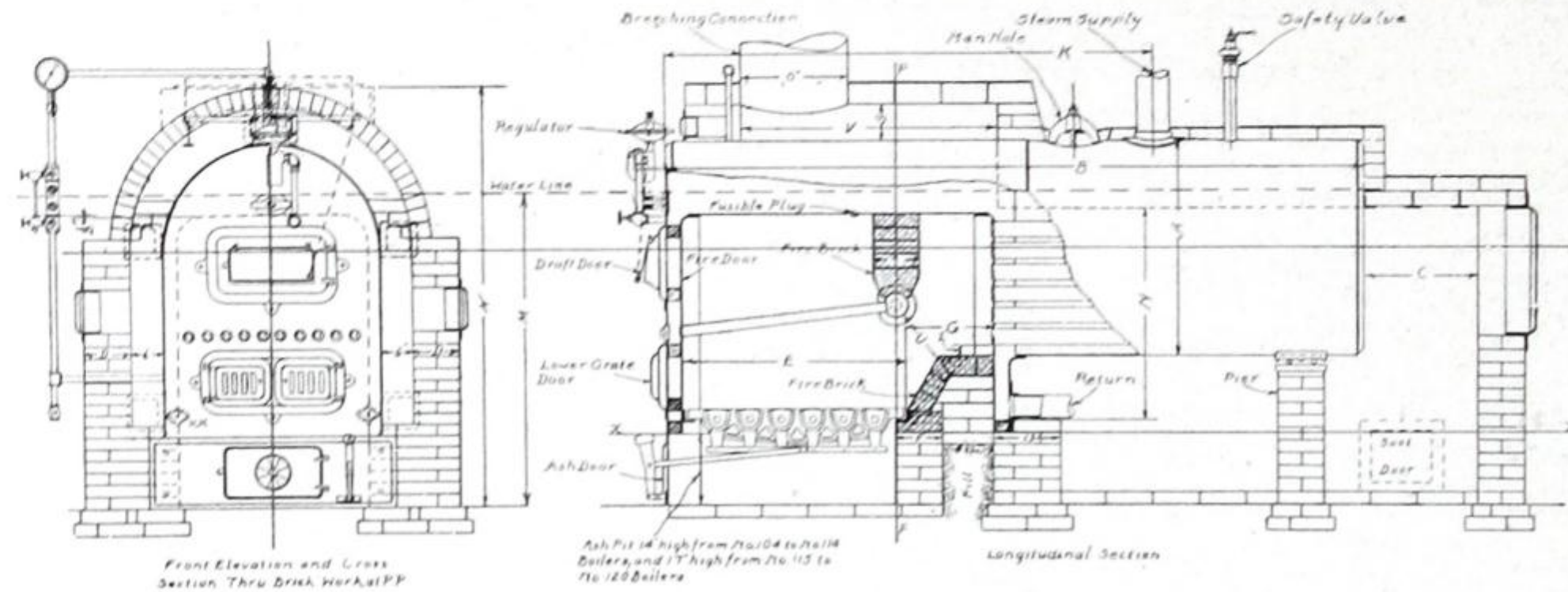
SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS**SPECIFICATIONS SAFFORD-KEWANEE BRICK-SET SMOKELESS BOILERS**

These boilers will heat all the radiation shown by their rated capacity.

Number.....	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Diameter Boiler.....inches	36	36	36	42	42	42	48	48	48	54	54	60	60	66	66	72	72
Length Boiler over all.....feet-inches	8-7	10-2	11-7	9-10	11-4	12-11	12-4	13-10	15-4	15-10	18-4	17-10	20-4	18-4	20-4	18-4	20-4
Width of Firebox.....inches	30	30	30	36	36	36	42	42	42	48	48	53	53	59	59	65	65
Length of Firebox.....inches	45	51	57	54	60	66	66	72	78	78	84	90	96	90	96	96	102
Heating Surface square feet.....	182	213	249	252	291	335	387	449	492	580	692	735	862	968	1092	1155	1310
Square feet of Steam capacity as rated for each square foot of heating surface....	8.8	8.9	8.8	9.9	9.9	9.9	9.8	9.8	10.0	10.0	10.1	11.1	11.0	10.8	11.0	11.2	11.4
Area of upper grate.....square feet	5.8	7.1	8.3	8.5	10.0	11.3	11.7	13.1	14.9	17.0	19.0	21.0	23.2	23.4	25.8	28.4	31.1
Square feet of heating surface for each square foot of grate.....	31	30	30	30	29	30	33	34	33	34	36	35	37	41	42	40	42
Diameter of Breeching.....inches	20	20	22	22	22	24	24	27	27	30	30	34	34	36	36	38	38
Diameter of Stack.....inches	18	18	20	20	20	22	22	24	24	28	28	32	32	34	34	36	36
Minimum height of Stack.....feet	40	40	40	50	50	50	50	55	55	60	60	60	60	70	70	70	70
Diameter of Stack for two Boilers...inches.....				26	28	30	30	32	32	34	36	38	38	40	42	44	46
Minimum height of Stack for two Boilers.....feet.....				60	60	60	60	60	60	70	70	70	75	75	80	80	80
Size of Steam opening (one).....inches	4	4	4	6	6	6	6	6	7	7	7	7	7	8	8	8	8
Size of Return (one).....inches	3	3	3	4	4	4	4	4	5	5	5	5	5	6	6	6	6
Size of Safety Valve.....inches	2½	2½	2½	3	3	3	3	3½	3½	4	4	4	2-3	2-3	2-3½	2-3½	2-3½
Number and size of Supply and Return openings for Water.....inches	2-5	2-5	2-6	2-6	2-6	2-6	2-6	2-7	2-7	2-7	2-7	2-8	2-8	2-10	2-10	2-10	2-10
Height of Water Line.....inches	59	59	59	61	61	61	65	65	65	67	67	75	75	80	80	86	86
Height from floor to top of brick work,ins.	76	76	76	82	82	82	89	89	89	95	95	107	107	113	113	119	119

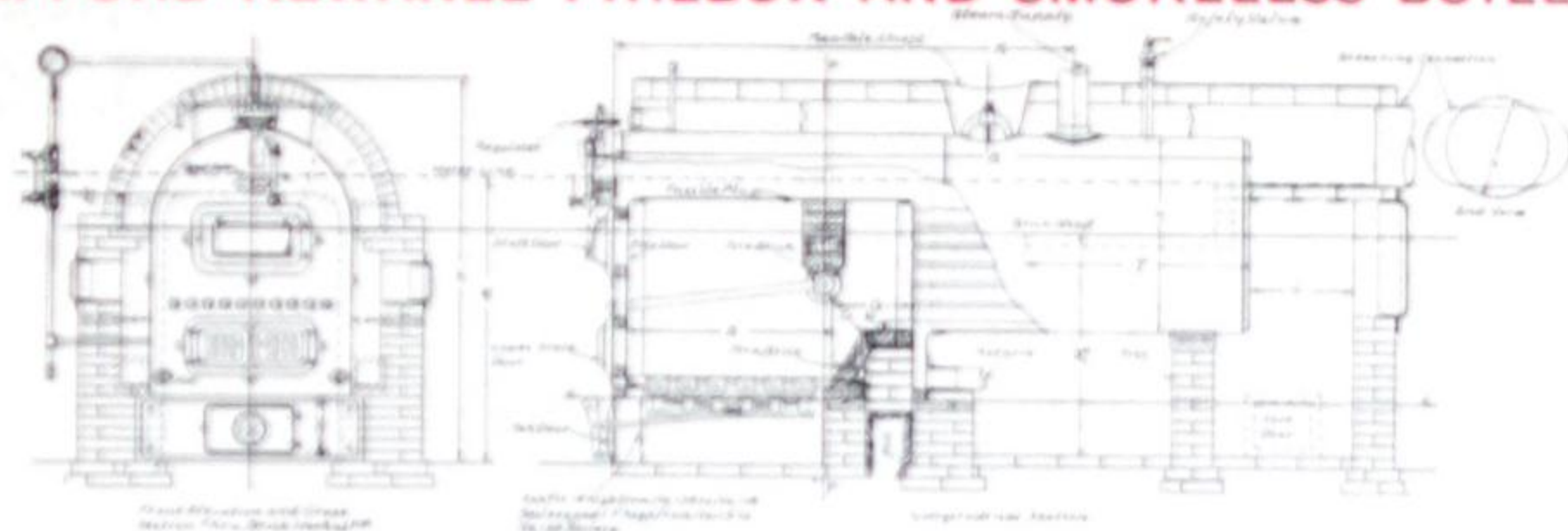
For Setting Plans and other measurements see pages 88 and 89.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS



Section of Smokeless Boiler Showing Setting of Safford-Kewanee Brick-Set Smokeless Firebox Boilers. Stack Connection at Front.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS



Section of Smokeless Boiler showing Setting of Safford-Kewanee Brick-Set Smokeless Firebox Boilers.
Stack Connection at Rear.

	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Diameter Boiler "A" inches	36	36	36	42	42	42	48	48	48	54	54	60	60	66	66	72	72
Length Boiler "B" feet, ins.	8-7	10-2	11-7	9-10	11-4	12-11	12-4	13-10	15-4	15-10	18-4	17-10	20-4	18-4	20-4	18-4	20-4
Rear Space "C" inches	17	17	17	22	22	22	22	22	22	24	24	24	24	24	24	28	24
Thickness Wall "D" inches	9	9	9	9	9	9	9	9	9	13	13	13	13	13	13	13	13
Length Grate "E" inches	31	37	43	37	43	49	43	49	55	55	61	61	67	61	67	67	73
Width of Ash-Pit "J" inches	31	31	31	37	37	37	43	43	43	49	49	54	54	60	60	66	66
Thickness Bridge Wall "F" . . . in.	9	9	9	9	9	9	13	13	13	18	18	18	18	18	18	18	18
From Grates to tube sheet "G" . . . inches	14	14	14	17	17	17	23	23	23	23	23	29	29	29	29	29	29
Total Height "H" inches	76	76	76	82	82	82	89	89	89	95	95	107	107	113	113	119	119
Location Supply "K" ft., ins.	0-11	1-8	2-5	1-4	2-4	2-11	2-6	3-6	3-7	3-11	4-5	4-1	5-2	3-6	4-8	3-9	4-5
Top Flue Space "S" inches	7	7	7	7	7	7	8	8	8	8	8	10	10	10	10	10	10
Total Length "L" ft., ins.	10-7	12-3	13-9	12-5	13-11	15-5	14-11	16-5	17-11	18-11	21-5	20-11	23-5	21-5	23-5	21-9	23-9
Total Width "W" ft., ins.	5-6	5-6	5-6	6	6	6	6-6	6-6	6-6	7-8	7-8	8-2	8-2	8-8	8-8	9-2	9-2
Total Width "R" ft., ins.	10-3	10-3	10-3	11-3	11-3	11-3	12-3	12-3	12-3	14-3	14-3	15-3	15-3	16-3	16-3	17-3	17-3
Common Brick for one Boiler . . .	2500	2800	2900	3100	3400	3600	4050	4350	4550	6500	6700	7400	7900	8200	8600	9100	9600
Common Brick for two Boilers . .	4200	4850	4950	5400	5900	6200	7000	7500	7850	11650	11800	13150	13950	14550	15200	16200	17050
Fire Brick for one Boiler	72	72	72	90	90	90	108	108	108	150	150	190	190	230	230	300	300
Fire Brick for two Boilers	144	144	144	180	180	180	216	216	216	300	300	380	380	460	460	600	600

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

WE have pleasure in presenting to the Architects, Engineers and the Steam-heating Trade of Canada, and all those interested in an efficient, economical and permanent boiler for the heating of large public and private buildings, a complete line of self-contained steam and hot water steel heating boilers, both in the direct draft, and smokeless down-draft types.

The essential feature of the Safford-Kewanee Portable Firebox Boilers is that the fire travel is all within the boiler. The hot gases pass from the fire box through the lower tubes into the rear chamber and then through the upper tubes to the smoke box at the front, from which the smoke pipe connection is made. These tubes are all surrounded by water and present a large heating surface, ensuring a thorough absorption of the heat from the gases passing through.

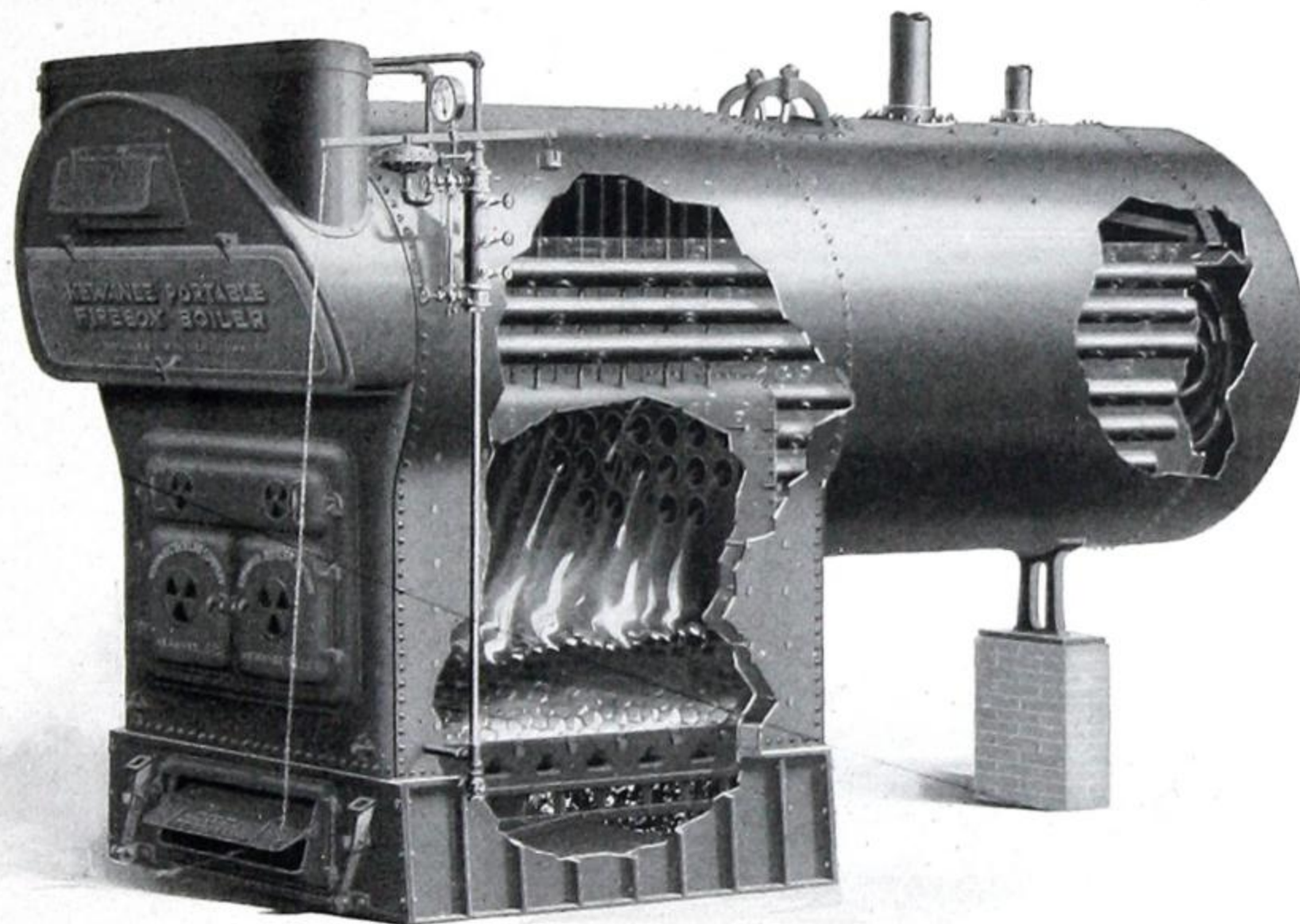
Safford-Kewanee Portable Firebox Boilers are built of the best steel made—mild, open-hearth steel of a tensile strength of 60,000 pounds per square inch. They are built of the same material and in the same manner as high-pressure power boilers.

Safford-Kewanee Portable Firebox Boilers burn any kind of fuel, hard, soft and lignite coal, coke and gas.

The Safford-Kewanee Portable Smokeless Boiler will burn soft coal smokelessly,—and in doing so, utilizes the full value of the coal consumed. The essential features are the two grates, one above the other. The upper one is a water grate. The lower one is an ordinary shaking grate.

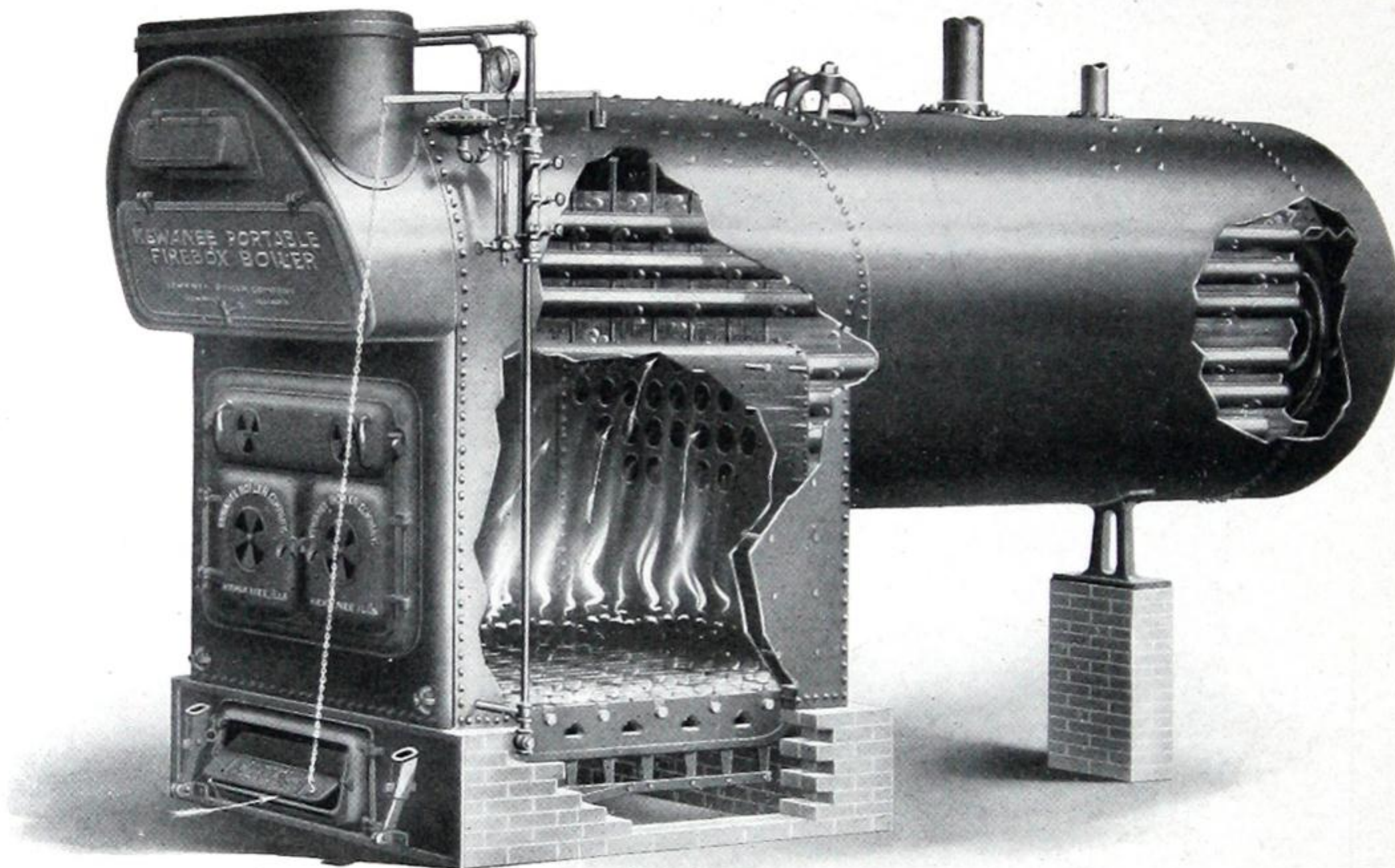
SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS



Boilers No. 414 (and smaller) made as shown above. Iron Ash-pits (as illustrated) furnished with Boilers No. 409 and smaller.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS
SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS



Boilers No. 415 (and larger) made as shown above. Boilers No. 410 (and larger) set on brick foundations as illustrated.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS**SPECIFICATIONS AND PRICE LIST—SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS**

These boilers will heat all the radiation shown by their rated capacity.

Number.....	0000	000	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
Capacity, Steam..sq. feet	500	700	900	1100	1300	1500	1800	2100	2400	2800	3300	3800	4300	4800	5500	6000	7000	8000	9000	10000	12000	13000
Capacity, Water..sq. feet	800	1100	1500	1800	2100	2500	2900	3400	4000	4600	5400	6200	7000	7800	9000	9800	11400	13000	15000	17000	20000	22000
Code, Steam Boiler, complete.....	Pick	Pill	Pig	Pillar	Pinch	Pink	Piston	Pit	Pipe	Plaid	Plank	Plat	Plaza	Plead	Place	Plod	Plain	Plunge	Plush	Poet	Point	Polar
Code, Water Boiler, complete.....	Prank	Preach	Pray	Prefer	Press	Pretty	Prick	Pride	Prime	Prince	Print	Prism	Proud	Prone	Proxy	Psalm	Pulp	Punch	Pulse	Poet	Purge	Pyre
Price Steam Boiler, castings and Tools.....	\$300	\$320	\$360	\$380	\$400	\$440	\$470	\$500	\$600	\$650	\$700	\$800	\$870	\$920	\$1000	\$1070	\$1300	\$1450	\$1700	\$1850	\$2000	\$2200
Price, Steam Trimmings.	\$18	\$18	\$18	\$18	\$18	\$19	\$19	\$19	\$23	\$23	\$23	\$23	\$23	\$23	\$28	\$28	\$40	\$40	\$40	\$40	\$44	\$44
Price, complete.....	\$318	\$338	\$378	\$398	\$418	\$459	\$489	\$519	\$623	\$673	\$723	\$823	\$893	\$943	\$1028	\$1098	\$1340	\$1490	\$1740	\$1890	\$2044	\$2244
Price Water Boiler, castings and Tools.....	\$320	\$340	\$380	\$400	\$420	\$460	\$490	\$520	\$620	\$670	\$720	\$820	\$890	\$940	\$1020	\$1090	\$1330	\$1480	\$1750	\$1900	\$2050	\$2250
Approximate weight, lbs.	2900	3200	4100	4500	4900	5500	6000	6500	7600	8600	9100	10000	11000	12000	13000	14000	16000	17500	20000	22000	23000	24000

Extras and Changes—add to above lists

For longer shell, each foot or fraction of a foot..	\$20	\$20	\$30	\$30	\$30	\$40	\$40	\$40	\$50	\$50	\$50	\$70	\$70	\$70	\$80	\$80	\$80	\$80	\$90	\$90	\$100	\$100
For longer Firebox, including grate, each six inches.....	\$24	\$24	\$30	\$30	\$30	\$40	\$40	\$40	\$46	\$46	\$46	\$60	\$60	\$60	\$70	\$70	\$80	\$80	\$100	\$100	\$120	\$120

Opening in Firebox for Coil \$4.00 list per boiler.

Lists for Boilers Nos. 0000 to 409 inclusive, include cast iron base.

Steam Trimmings consist of:—Steam Gauge, standard water column with water gauge and try cocks, safety valve as required by provincial regulations for low pressure heating boilers, and automatic damper regulator.

Firing Tools consist of:—Hoe, poker, slice bar and standard tube cleaner.

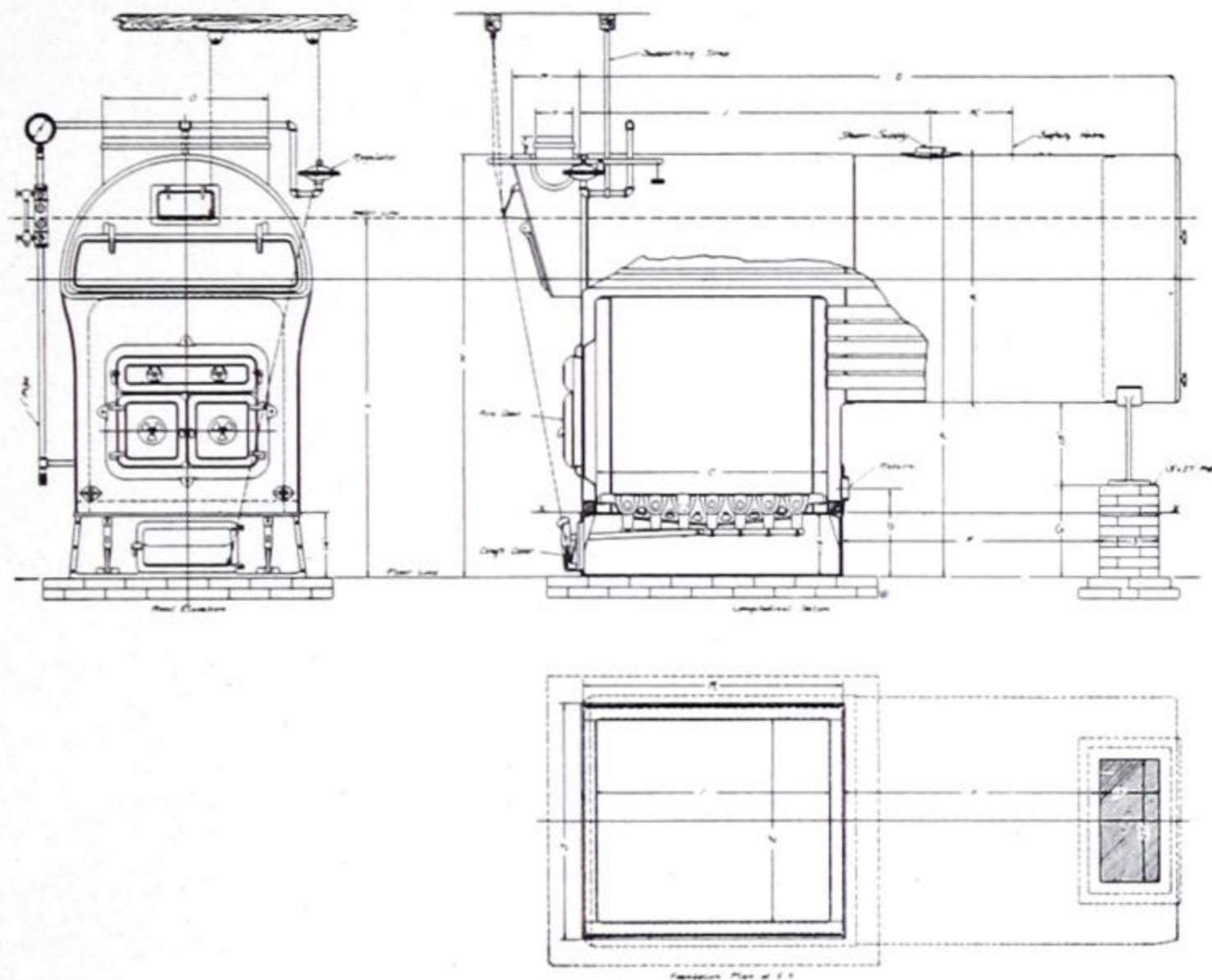
For cost of covering with Mineral Wool Blocks, or Asbestos Sponge Felt, see page 257.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS**ADDITIONAL SPECIFICATIONS—SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS**

These Boilers will heat all the radiation shown by their capacity.

Number.....	0000	000	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
Diam. of Boiler.....inches	30	30	36	36	36	42	42	42	48	48	48	54	54	54	60	60	60	60	66	66	72	72
Length of Boiler....feet and ins	5-5	6-5	5-11	6-5	7-0	6-8	7-8	8-7	8-3	9-2	10-9	9-8	10-9	11-9	12-1	13-3	14	15-10	15-5	17-0	15-7	17-2
Width of Firebox.....inches	19	19	24	24	24	30	30	30	36	36	36	42	42	42	48	48	53	53	59	59	65	65
Length of Firebox.....inches	20	26	26	32	38	32	38	44	38	44	50	44	50	56	56	62	56	62	62	68	68	74
Height of Firebox.....inches	30	30	35	35	35	38	38	38	41	41	41	44	44	44	49	49	49	49	52	52	54	54
Heating surface.....square ft.	75	89	118	128	146	187	219	248	281	320	375	422	477	528	583	642	701	804	905	1003	1202	1334
Area, Grate.....square feet	2.5	3.3	4.3	5.4	6.3	6.3	8.0	9.2	9.5	11.0	12.6	13.0	14.7	16.4	18.8	20.0	20.7	22.1	25.5	27.9	30.8	33.5
Diameter of Breeching...inches	12	12	16	16	16	16	16	16	20	20	20	22	22	22	26	26	26	26	28	28	32	32
Diameter of Stack.....inches	12	12	14	14	14	14	14	14	18	18	18	20	20	20	24	24	24	24	26	26	30	30
Minimum height of Stack..feet	35	35	40	40	40	40	40	45	50	50	60	60	60	70	70	70	70	70	70	80	90	90
Diameter Stack 2 Boilers, inches	14	14	18	18	18	20	20	20	24	24	24	26	26	26	32	32	32	32	34	34	40	40
Minimum height of Stack 2 Boilers.....feet	40	40	40	40	45	45	45	45	50	50	60	60	60	70	70	70	80	80	80	90	90	90
Size of Steam Opening (1), ins.	3	3½	4	5	5	5	6	6	6	6	6	6	6	6	7	7	7	7	8	8	8	8
Size of Return Opening (1), ins.	2	2	2½	2½	2½	3	3	3	4	4	4	4	4	4	5	5	5	5	6	6	6	6
Size of Safety Valve Opening, inches	1½	2	2	2	2½	2½	2½	3	3	3	3½	3½	3½	3½	4	4	4	2-3	2-3½	2-3½	2-3½	2-4
Number and Size of Supply and Return Openings for Water Boiler.....inches	1-4	1-4	1-6	1-6	1-6	1-6	1-6	1-6	2-5	2-5	2-5	2-6	2-6	2-6	2-7	2-7	2-7	2-7	2-8	2-8	2-10	2-10
Height of Water Line...inches	55	55	60	60	60	67	67	67	71	71	71	74	74	74	83	83	86	86	90	90	96	96
Height Floor to Top of steam supply.....inches	62	62	70	70	70	78	78	78	84	84	84	90	90	90	100	100	103	103	109	109	115	115

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS



SETTING PLAN SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

Note:—Boilers 410, 411, 412, 413 and 414 are constructed as shown above, but are set on brick ash-pit as shown on page 92.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

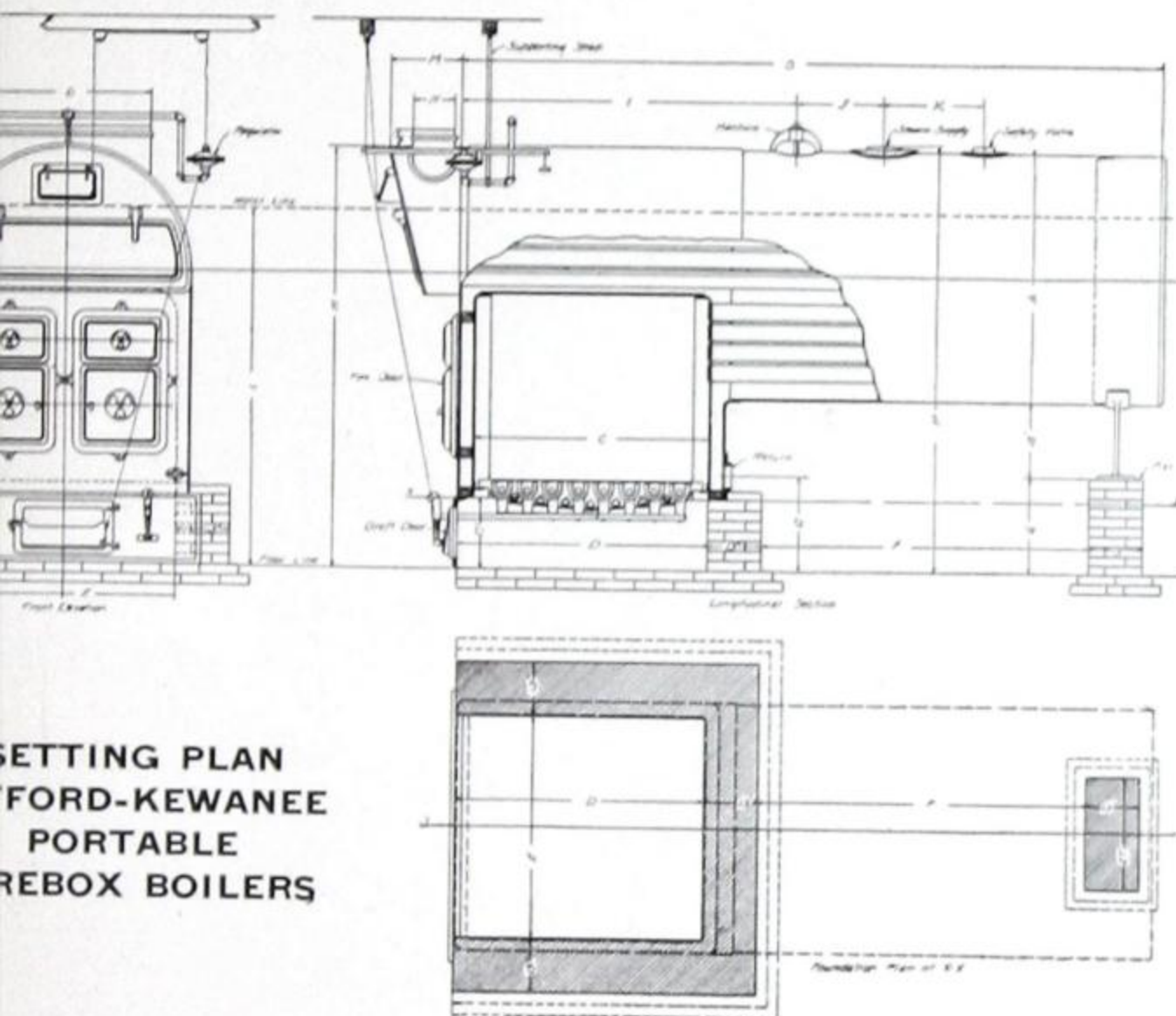
SETTING MEASUREMENTS SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS

Number of Boiler.....	0000	000	401	402	403	404	405	406	407	408	409	410	411	412	413	414
Diameter of Boiler, inches.....A	30	30	36	36	36	42	42	42	48	48	48	54	54	54	60	60
Length of Boiler, feet and inches.....B	5-5	6-5	5-11	6-5	7-0	6-8	7-8	8-7	8-3	9-2	10-9	9-8	10-9	11-9	12-1	13-3
Length of Ash Pit, inches.....D												47	53	59	59	65
Width of Ash Pit, inches.....E												43	43	43	49	49
Length of Ash Pit Base, inches.....R	28	34	34	40	46	40	46	52	46	52	58	Boiler No. 410 and larger set on Brick Ash Pit Base				
Width of Ash Pit, Base inches.....S	28	28	34	34	34	40	40	40	46	46	46					
From Ash Pit to Pier, inches.....F	27	33	27	27	28	30	36	41	39	44	57					
From rear of Ash Pit wall to pier, inches.....F												45	52	58	62	70
Height of Pier, inches.....G	12	12	14	14	14	16	16	16	17	17	17	20	20	20	20	20
Height to Top of Shell, inches.....H	61	61	69	69	69	77	77	77	83	83	83	92	92	92	98	98
From front of boiler to steam supply, ft. & in...J	2-11	3-7	3-6	4-0	4-7	4-0	4-7	5-3	4-8	5-3	6-3	5-6	6-4	7-11	8-0	8-8
From Steam Supply to Safety Valve, inches...K	11	11	10	10	10	13	13	13	13	14	18	16	18	14	16	18
Height of Water Line, inches.....L	55	55	60	60	60	67	67	67	71	71	71	74	74	74	83	83
Length of Smoke Box, inches.....M	9	9	11	11	11	12	12	12	14	14	14	15	15	15	17	17
Width Breeching Connection, inches.....N	6	6	8	8	8	8	8	8	8	8	8	8	8	8	10	10
Length of Breeching Connection, inches.....O	14	14	18	18	18	22	22	22	28	28	28	36	36	36	42	42
Height of Steam Supply, inches.....P	62	62	70	70	70	78	78	78	84	84	84	90	90	90	100	100
Height of Return, inches.....Q	18	18	18	18	18	19	19	19	19	19	19	19	19	19	20	20
Number of Common Brick.....	150	170	210	220	230	250	260	290	290	320	330	650	700	750	800	850
Outside Surface to be Covered, square feet.....	50	55	65	70	75	80	90	105	115	130	150	155	175	185	190	220

Boilers Nos. 410, 411, 412, 413 and 414 are constructed as shown on page 91, but are set on brick base instead of cast iron ash pit. For cost of covering with Mineral Wool Blocks, or Asbestos Sponge Felt, see page 257.

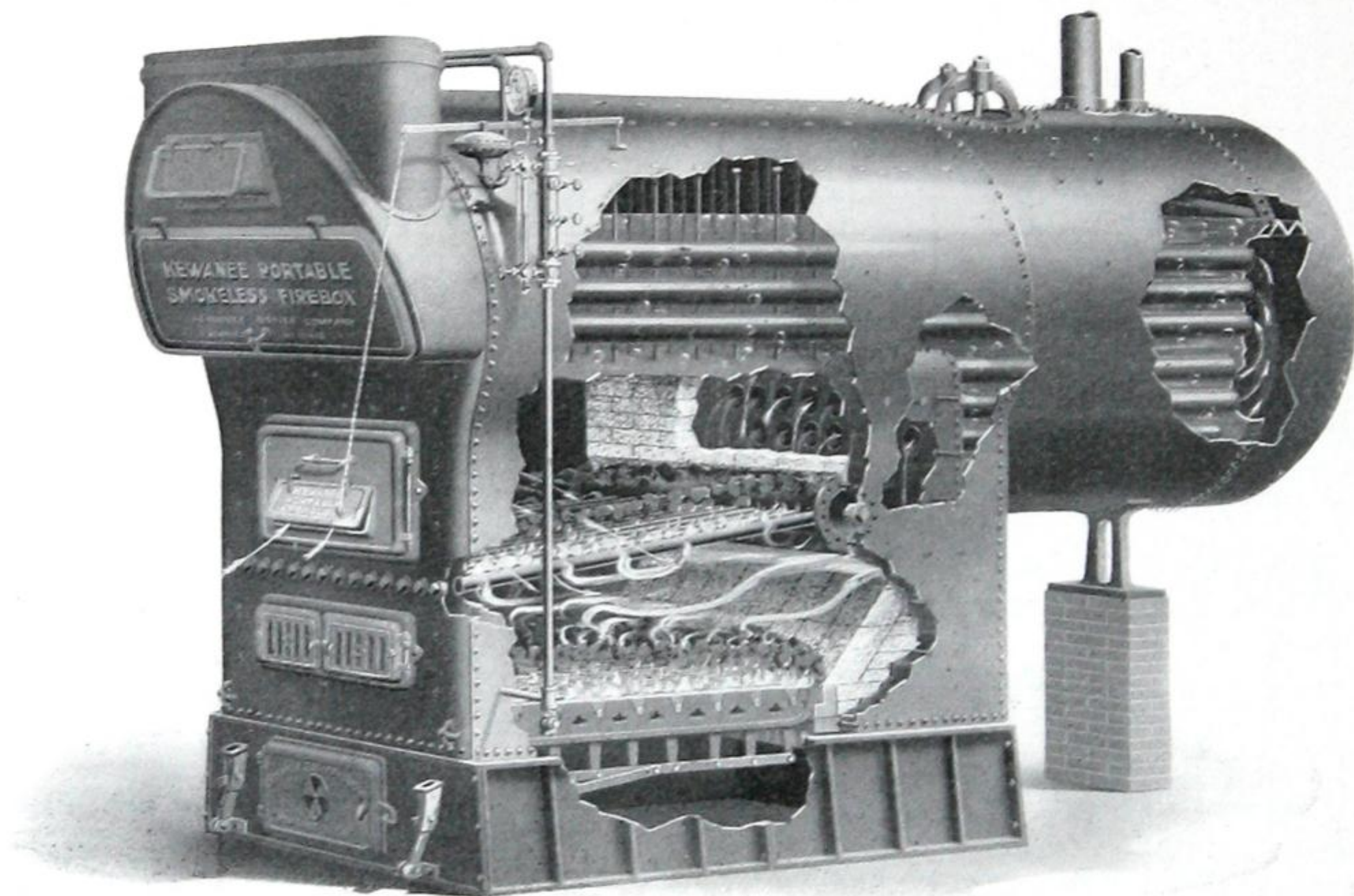
SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SETTING MEASUREMENTS SAFFORD-KEWANEE PORTABLE FIREBOX BOILERS



SETTING PLAN
SAFFORD-KEWANEE
PORTABLE
FIREBOX BOILERS

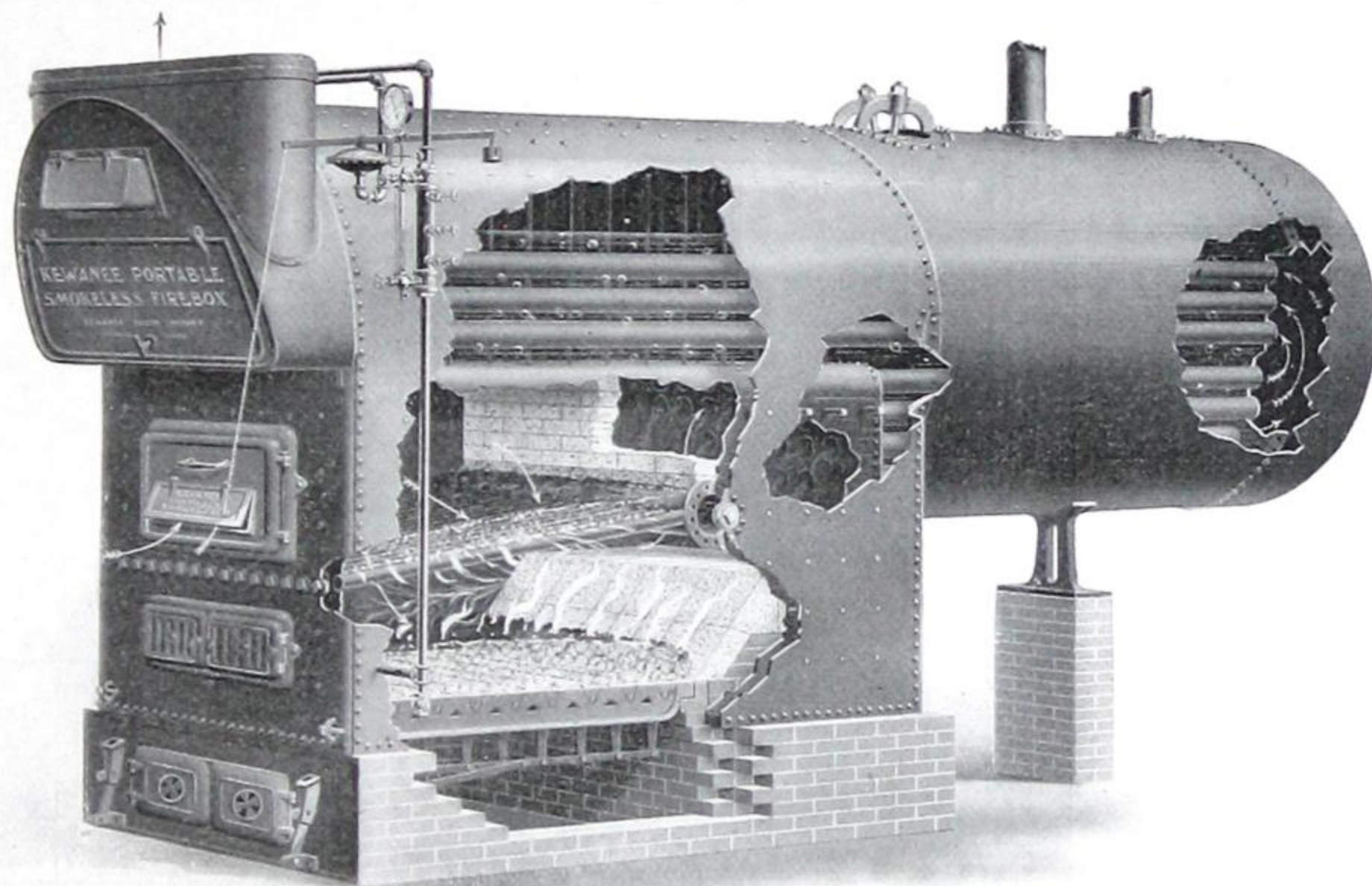
Number.....	415	416	417	418	419	420
Diameter of Boiler, inches.....A	60	60	66	66	72	72
Length of Boiler, feet and inches. B	14	15-10	15-5	17-0	15-7	17-2
Length of Ash Pit, inches.....D	60	66	66	72	72	78
Width of Ash Pit, and Firebox, inches.....E	54	54	60	60	66	66
From rear of Ash Pit Wall to Pier, feet and inches.....F	6-7	7-11	7-5	8-5	6-11	7-11
Height of Pier, inches.....G	23	23	23	23	23	23
Height to Top of Shell, inches...H	101	101	107	107	113	113
From Front of Boiler to Manhole, feet and inches.....I	6-8	7-2	7-2	7-8	7-8	8-3
Manhole to Steam Supply, ins....J	21	27	26	30	24	36
Steam Supply to Safety Valve, inches.....K	21	27	36	26	24	30
Height of Water Line, inches...L	86	86	90	90	96	96
Length Smoke Box, inches.....M	17	17	18	18	20	20
Width Breeching Connection, inches.....N	10	10	10	10	12	12
Length Breeching Connection, inches.....O	42	42	48	48	58	58
Height Steam Supply, inches...P	103	103	109	109	115	115
Height Return, inches.....Q	23	23	23	23	23	23
Number of Common Brick.....	1100	1170	1230	1300	1350	1430
Outside Surface to be covered, sq. feet.....	250	280	290	310	315	345

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS**SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS**

Boilers No. 314 (and smaller) constructed as above. Iron Ash-pit (as illustrated) furnished with Boilers No. 309 and smaller.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS



Boilers No. 315 (and larger) constructed as shown above. Boilers No. 310 (and larger) set on brick foundation as illustrated.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS**SPECIFICATIONS AND PRICE LIST—SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS**

These Boilers will heat all the radiation shown by their rated capacity

Number.....	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322
Capacity, Steam, sq.ft.	1000	1200	1500	1900	2100	2500	3000	3500	4000	4500	5000	5500	6000	6500	7500	8500	10000	12000	14000	16000	18000	20000
Capacity, Water, sq.ft.	1600	2000	2400	3100	3400	4000	4800	5700	6500	7300	8200	9000	9800	10500	12200	13800	16300	20000	23000	26000	30000	33000
Code, Steam Boiler, complete.....	Park	Pad	Pain	Paint	Palmy	Paltry	Panel	Panic	Pansy	Papa	Paper	Parch	Pail	Parcel	Pardon	Pat	Parole	Party	Pastry	Patrol	Pawn	Pay
Code, Water Boiler, complete.....	Peace	Pane	Pea	Pearl	Pebble	Peddle	Pelt	Penal	Pencil	Pen	Pepsin	Perch	Perfect	Peril	Period	Perish	Permit	Persue	Person	Peruse	Petal	Prestle
Price Steam Boiler, Castings and Tools	\$500	\$530	\$560	\$680	\$730	\$780	\$900	\$950	\$1000	\$1100	\$1200	\$1300	\$1500	\$1650	\$1850	\$2100	\$2300	\$2400	\$2600	\$2800	\$3200	\$3400
Price, Steam Trimm'gs	\$20	\$20	\$20	\$20	\$20	\$20	\$24	\$24	\$24	\$24	\$30	\$30	\$30	\$30	\$30	\$30	\$40	\$40	\$50	\$50	\$50	\$50
Price, complete.....	\$520	\$550	\$580	\$700	\$750	\$800	\$924	\$974	\$1024	\$1124	\$1230	\$1330	\$1530	\$1680	\$1880	\$2130	\$2340	\$2440	\$2650	\$2850	\$3250	\$3450
Price Water Boiler, Castings and Tools	\$520	\$550	\$580	\$700	\$750	\$800	\$920	\$970	\$1020	\$1120	\$1220	\$1320	\$1520	\$1680	\$1880	\$2150	\$2350	\$2450	\$2650	\$2850	\$3250	\$3450
Approx. weight, lbs...	5300	5600	6000	6500	6800	7200	8400	9200	10000	11000	12000	13000	14000	15000	19000	20000	22000	23000	26000	27000	29000	32000

Extras and Changes—add to above lists

For longer Shell each foot or fraction of a foot.....	\$30	\$30	\$30	\$40	\$40	\$40	\$50	\$50	\$50	\$70	\$70	\$70	\$80	\$80	\$80	\$80	\$90	\$90	\$100	\$100	\$120	\$120
For longer Firebox, including Grate, each six inches.....	\$50	\$50	\$50	\$60	\$60	\$60	\$80	\$80	\$80	\$90	\$90	\$90	\$120	\$120	\$120	\$120	\$140	\$140	\$160	\$160	\$180	\$180

Opening in Firebox for Coil \$4.00 list per Boiler. List for Boilers Nos. 301 to 309 inclusive, include Cast Iron Base.

Steam trimmings consist of:—Steam Gauge, standard water column with water gauge and try cocks, safety valve as required by provincial regulations for low pressure heating boilers, and automatic damper regulator. Firing tools consist of hoe, poker, slice bar and standard tube cleaner.

For cost of covering with mineral wool blocks or asbestos sponge felt, see page 257.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS**ADDITIONAL SPECIFICATIONS—SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS**

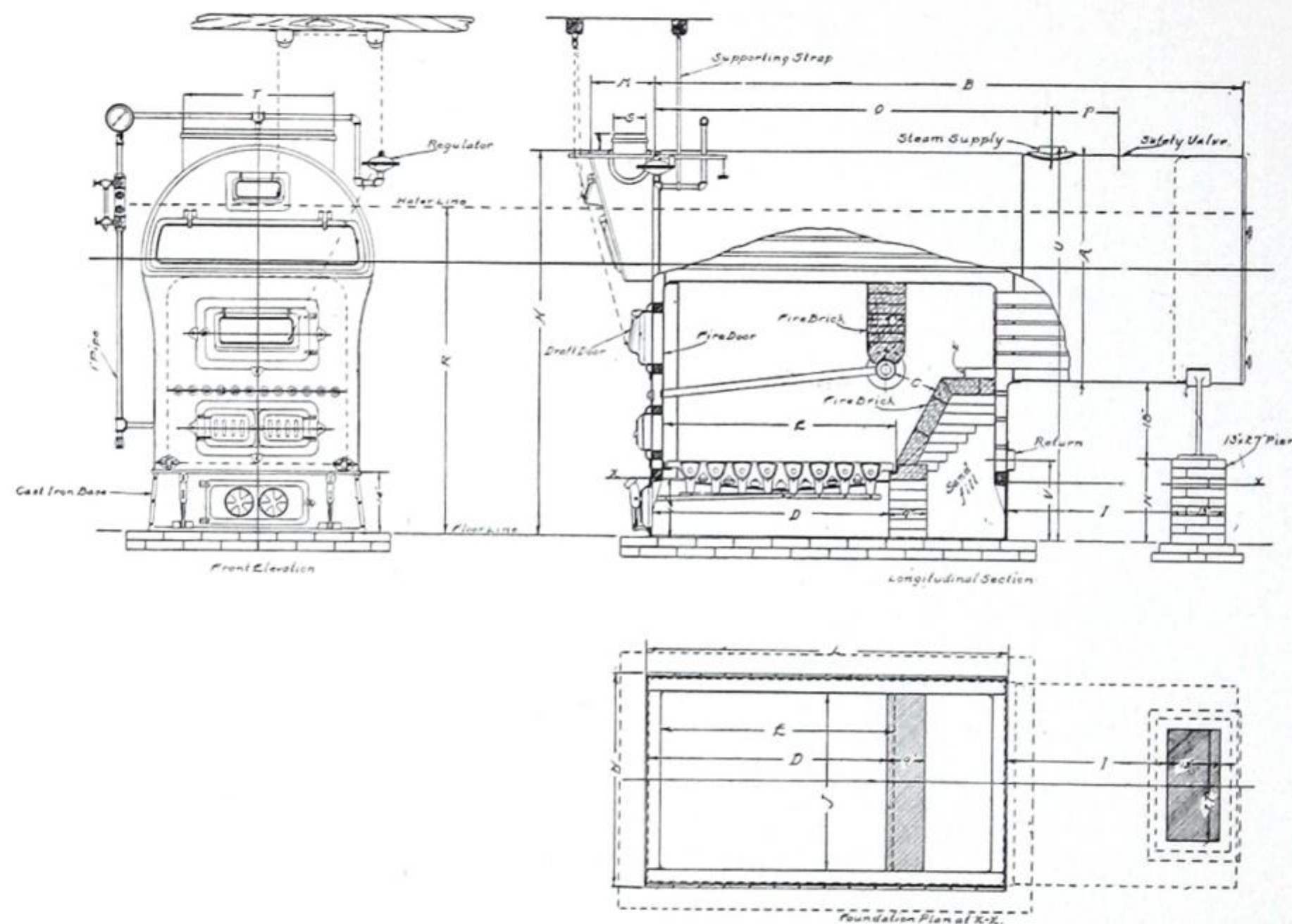
These Boilers will heat all the radiation shown by their capacity

Number.....	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322
Diameter of Boiler...inches	36	36	36	42	42	42	48	48	48	54	54	54	60	60	60	60	66	66	72	72	78	78
Length Boiler....feet-inches	7-5	7-9	8-6	7-9	8-6	9-4	8-9	10-1	11-1	10-7	11-7	12-7	12-7	13-7	14-11	15-11	15-6	17-6	16-3	17-7	17-6	18-6
Width of Firebox...inches	24	24	24	30	30	30	36	36	36	42	42	42	48	48	53	53	59	59	65	65	71	71
Length of Firebox...inches	44	48	51	48	51	57	54	60	66	72	78	84	78	84	90	96	90	96	96	102	102	108
Heating Surface...square ft.	155	161	180	211	236	261	287	341	380	425	473	528	580	630	708	760	846	981	1183	1308	1465	1563
Area Upper Grate, sq. feet	4.4	5.0	5.5	6.0	6.8	8.0	8.8	10.1	11.4	12.9	14.7	16.5	17.0	18.5	20.0	21.4	23.5	25.9	28.5	29.9	32.6	34.6
Diameter Breeching...inches	14	14	16	16	16	16	20	20	20	22	22	22	26	26	26	26	28	28	32	32	36	36
Diameter Stack.....inches	14	14	14	14	14	14	18	18	18	20	20	20	24	24	24	24	26	26	30	30	32	32
Minimum height Stack...ft.	40	40	45	50	50	50	60	60	70	75	75	80	80	80	80	80	80	90	90	90	100	100
Diameter Stack 2 Boilers, .....inches	18	18	18	20	20	20	24	24	24	26	26	26	32	32	32	32	34	34	40	40	44	44
Minimum height Stack 2 Boilers.....feet	40	40	45	50	50	50	60	60	70	80	80	80	80	80	85	85	90	90	90	90	100	100
Size Steam Opening (1), ins.	4	5	5	6	6	6	6	6	6	6	6	6	7	7	7	7	8	8	8	8	8	8
Size Return Opening (1), ins.	2½	2½	2½	3	3	3	4	4	4	4	4	4	5	5	5	5	6	6	6	6	6	6
Size Safety Valve Opening, .....inches	2	2	2	2½	2½	2½	3	3	3	3½	3½	3½	4	4	4	4	2-3	2-3½	2-3½	2-3½	2-3½	2-4
Number and size of Supply and Return Openings for Water Boiler.....	1-6	1-6	1-6	1-6	1-6	2-6	2-6	2-6	2-6	2-6	2-7	2-7	2-7	2-7	2-7	2-8	2-8	2-10	2-10	2-10	2-10	2-10
Height of Water Line, inches	63	63	63	67	67	67	71	71	71	74	74	74	83	83	86	86	90	90	96	96	97	97
Height Floor to Top of Shell.....inches	72	72	72	77	77	77	83	83	83	89	89	89	98	98	101	101	107	107	113	113	115	115

For Setting Plans and other measurements see pages 102 to 105.

For cost of covering with Mineral Wool Blocks, or Asbestos Sponge Felt, see page 257.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS



SETTING PLAN SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

Note:—Boilers 310, 311, 312, 313 and 314 are constructed as above, but are set on brick ash-pit as shown on page 99

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

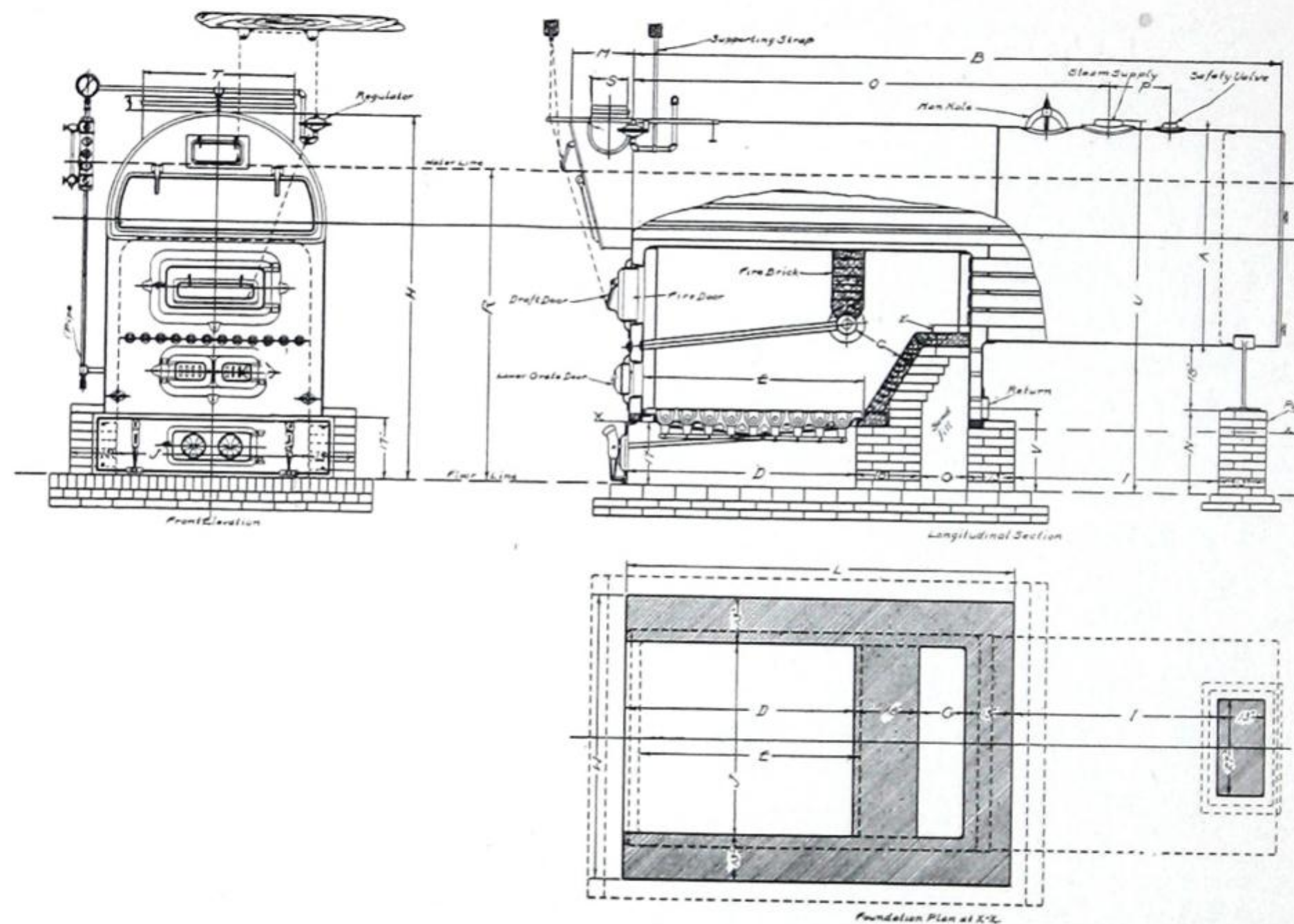
SETTING MEASUREMENTS FOR SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

Number of Boiler.....	301	302	303	304	305	306	307	308	309	310	311	312	313	314
Diameter of Boiler, inches.....A	36	36	36	42	42	42	48	48	48	54	54	54	60	60
Length of Boiler, feet and inches.....B	7-5	7-9	8-6	7-9	8-6	9-4	8-9	10-1	11-1	10-7	11-7	12-7	12-7	13-7
Header to Bridge Wall, inches.....C	5½	6	6½	6	6½	8	7½	9	9½	9	10	11	10	11
Length of Ash Pit, inches.....D	32	32	38	32	38	44	38	44	50	50	56	62	56	62
Length of Grate, inches.....E	31	31	37	31	37	43	37	43	49	49	55	61	55	61
Height of Return, inches.....V	18	18	18	19	19	19	19	19	19	19	19	19	19	19
Height of Steam Supply, inches.....U	73	73	73	78	78	78	84	84	84	90	90	90	100	100
Height of Boiler, inches.....H	72	72	72	77	77	77	83	83	83	89	89	89	98	98
From Ash Pit to Pier, inches.....I	27	27	33	27	33	37	29	39	45	.....	.....	.....	.....	.....
From rear of Ash Pit Wall to Pier, ins...I	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	33	39	45	51
Width of Ash Pit, inches.....J	25	25	25	31	31	31	37	37	37	43	43	43	49	49
Length of Ash Pit Base, inches.....L	51	55	58	55	58	64	61	67	73	.....	.....	.....	.....	.....
Length of Foundation, inches.....L	.....	.....	.....	.....	.....	.....	.....	.....	.....	84	90	96	90	96
Length of Smoke Box, inches.....M	11	11	11	12	12	12	14	14	14	15	15	15	17	17
Height of Pier, inches.....N	17	17	17	16	16	16	17	17	17	20	20	20	20	20
Front Part of Boiler to Steam Supply, feet and inches.....O	5-0	5-3	5-8	5-5	5-8	6-3	5-11	6-8	7-3	7-6	8-2	8-9	8-9	9-3
From Steam Supply to Safety Valve, ins.P	10	10	12	11	12	12	12	14	14	13	13	15	15	18
Height of Water Line, inches.....R	63	63	63	67	67	67	71	71	71	77	77	77	83	83
Width Breeching Connection, inches....S	8	8	8	8	8	8	8	8	8	8	8	8	10	10
Length Breeching Connection, inches...T	18	18	18	22	22	22	28	28	28	36	36	36	42	42
Width of Foundation, inches.....W	33	33	33	39	39	39	45	45	45	60	60	60	66	66
Number of Common Brick.....	310	325	335	390	400	425	450	460	475	875	925	975	975	1025
Number of Fire Brick.....	85	85	85	100	100	100	115	115	115	180	180	180	215	215
Outside surface to be covered, square feet.	100	104	112	117	121	133	148	157	173	184	212	221	255	265
Note:—Thickness Bridge Wall, inches...F	9	9	9	9	9	9	9	9	9	13	13	13	18	18
Bridge Wall to Rear Wall, inches.....G	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	12	12	7	7

Note:—Boilers Nos. 310, 311, 312, 313 and 314 are constructed as shown on page 98 but are set on brick foundation instead of iron ash pit as shown on page 99.

For cost of covering with Mineral Wool Blocks, or Asbestos Sponge Felt, see page 257.

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS



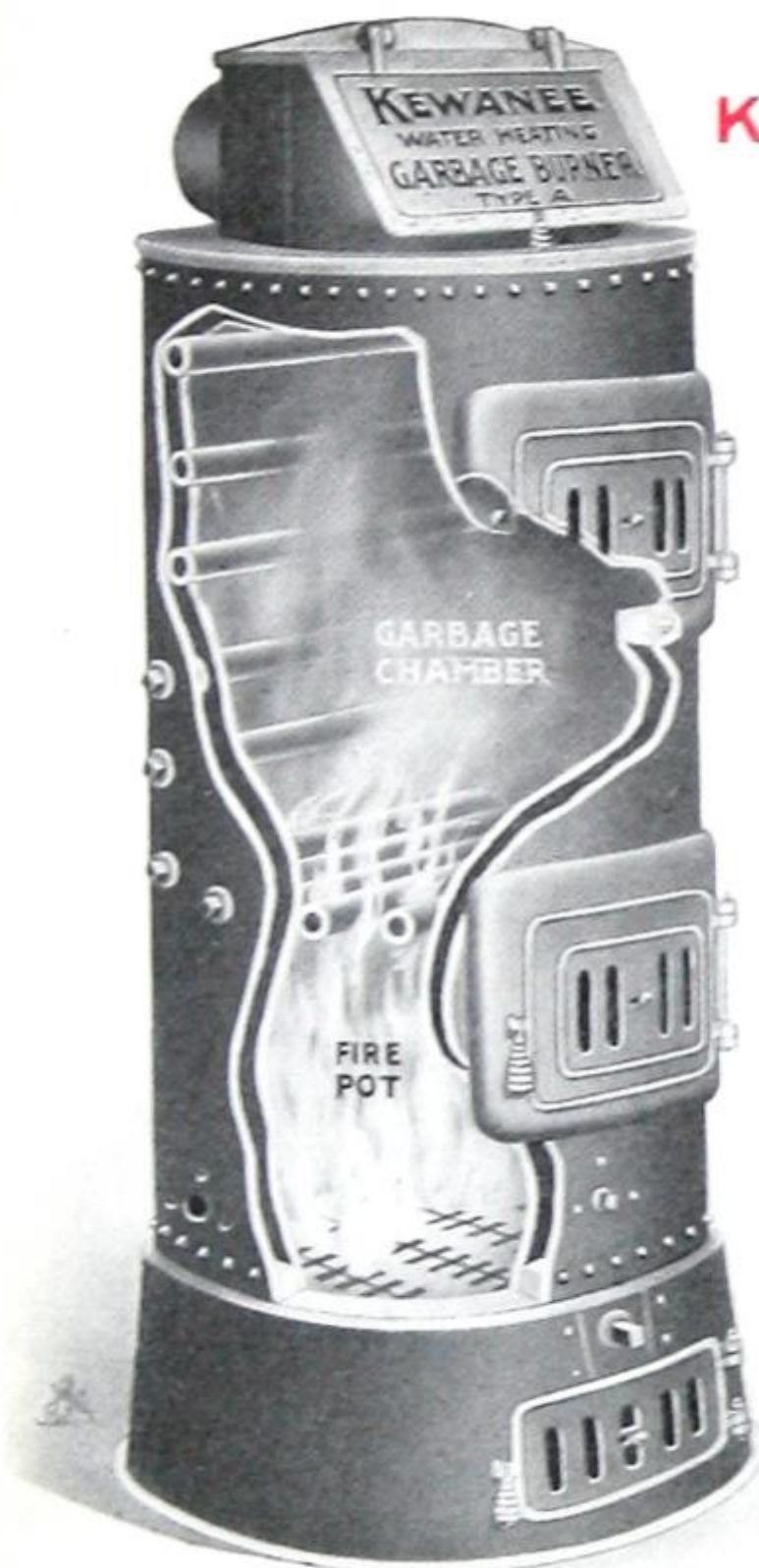
SETTING AND FOUNDATION PLAN—SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

SAFFORD-KEWANEE FIREBOX AND SMOKELESS BOILERS

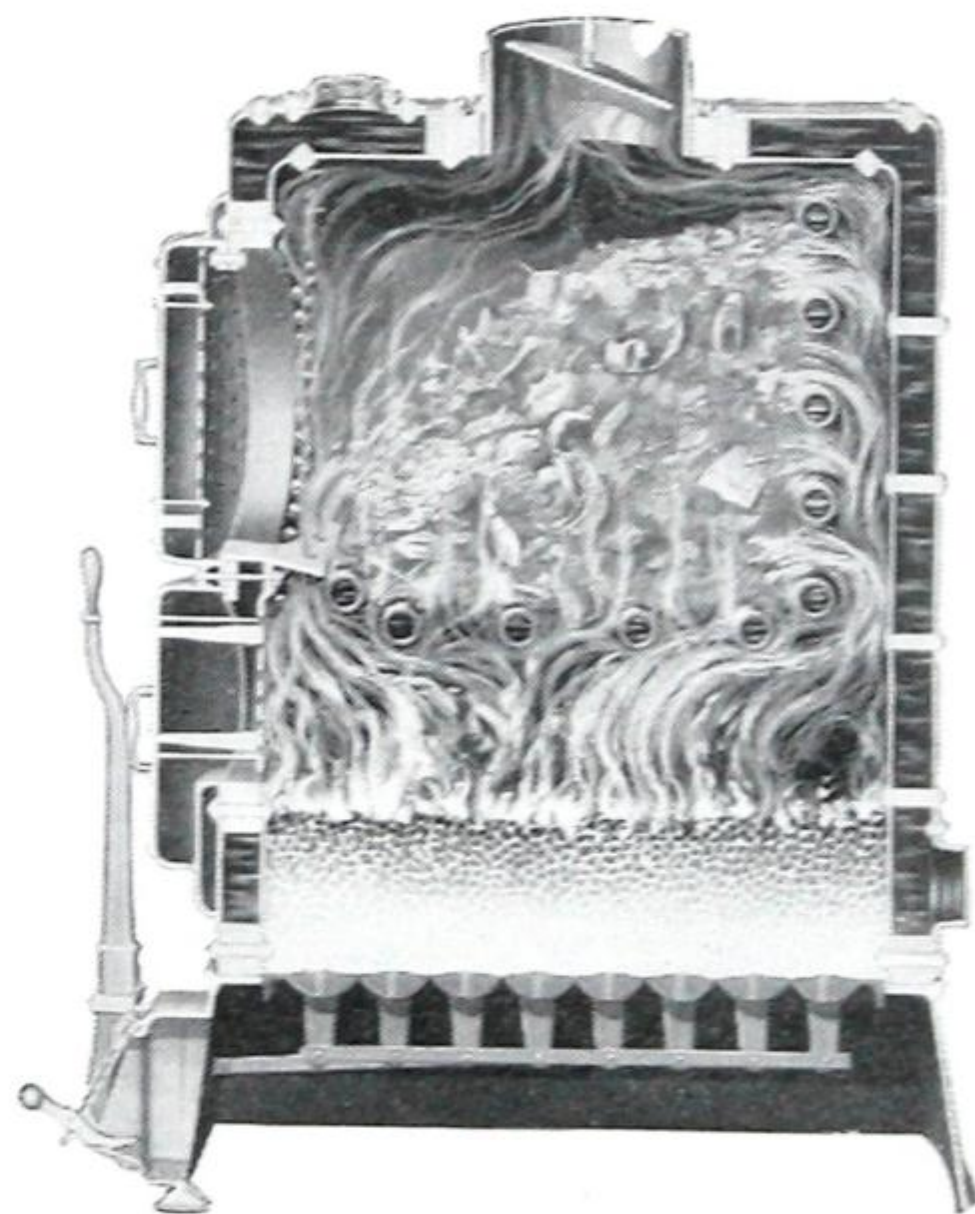
SETTING MEASUREMENTS—SAFFORD-KEWANEE PORTABLE SMOKELESS BOILERS

Number of Boiler.....	315	316	317	318	319	320	321	322
Diameter Boiler, inches.....A	60	60	66	66	72	72	78	78
Length of Boiler, feet and inches.....B	14-11	15-11	15-6	17-6	16-3	17-7	17-6	18-6
Header to Bridge Wall, inches.....C	12	12	13	13	14	14	15	15
Length of Ash Pit, inches.....D	63	69	63	69	69	75	75	75
Length of Grate, inches.....E	61	67	61	67	67	73	73	73
Bridge Wall to Rear Wall, inches.....G	13	13	13	13	13	13	13	19
Total Height, inches.....H	101	101	107	107	113	113	115	115
Rear Wall to Pier, inches.....I	57	63	62	80	63	74	72	79
Width of Ash Pit, inches.....J	53	53	59	59	65	65	71	71
Length of Foundation, inches.....L	107	113	107	113	113	119	119	125
Length of Smoke Box, inches.....M	17	17	18	18	20	20	20	20
Height of Pier, inches.....N	23	23	23	23	23	23	19	19
From Front Boiler to Steam Supply, feet and inches.....O	10-11	11-6	11-0	11-9	11-7	12-2	12-2	12-9
Steam Supply to Safety Valve, inches.....P	16	18	17	24	17	20	20	24
Height of Water Line, inches.....R	86	86	90	90	96	96	97	97
Width of Breeching, inches.....S	10	10	10	10	12	12	12	12
Length of Breeching, inches.....T	42	42	48	48	58	58	62	62
Height of Steam Supply, inches.....U	103	103	109	109	115	115	117	117
Height of Return, inches.....V	23	23	23	23	23	23	23	23
Width of Foundation, inches.....W	79	79	85	85	91	91	97	97
Number Common Brick.....	2100	2200	2200	2300	2450	2550	2675	2800
Number Fire Brick.....	250	270	320	310	320	325	360	375
Outside surface to be covered, square feet.....	266	280	290	330	335	360	370	400

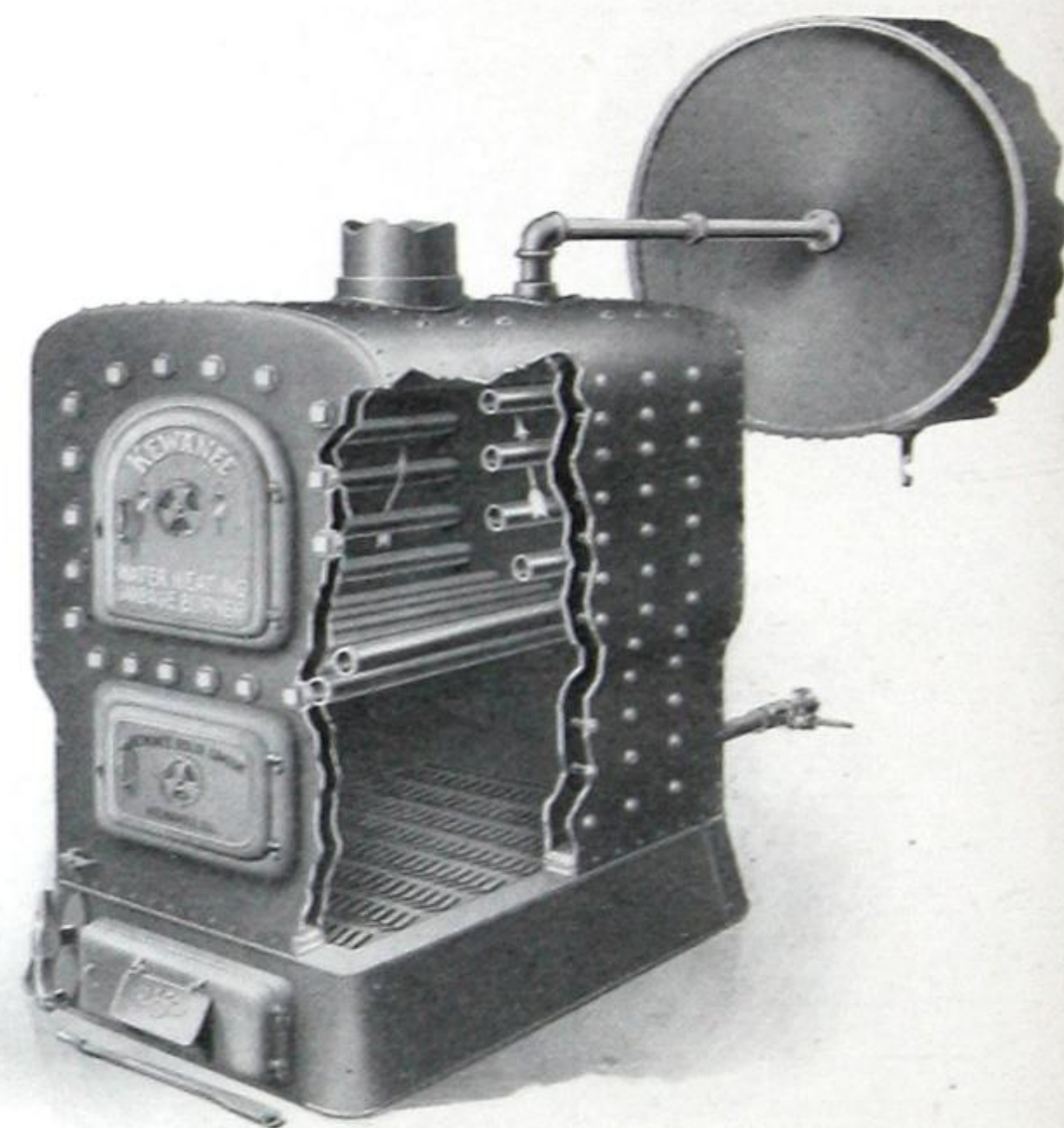
KEWANEE WATER-HEATING GARBAGE BURNERS



Type A



Type D



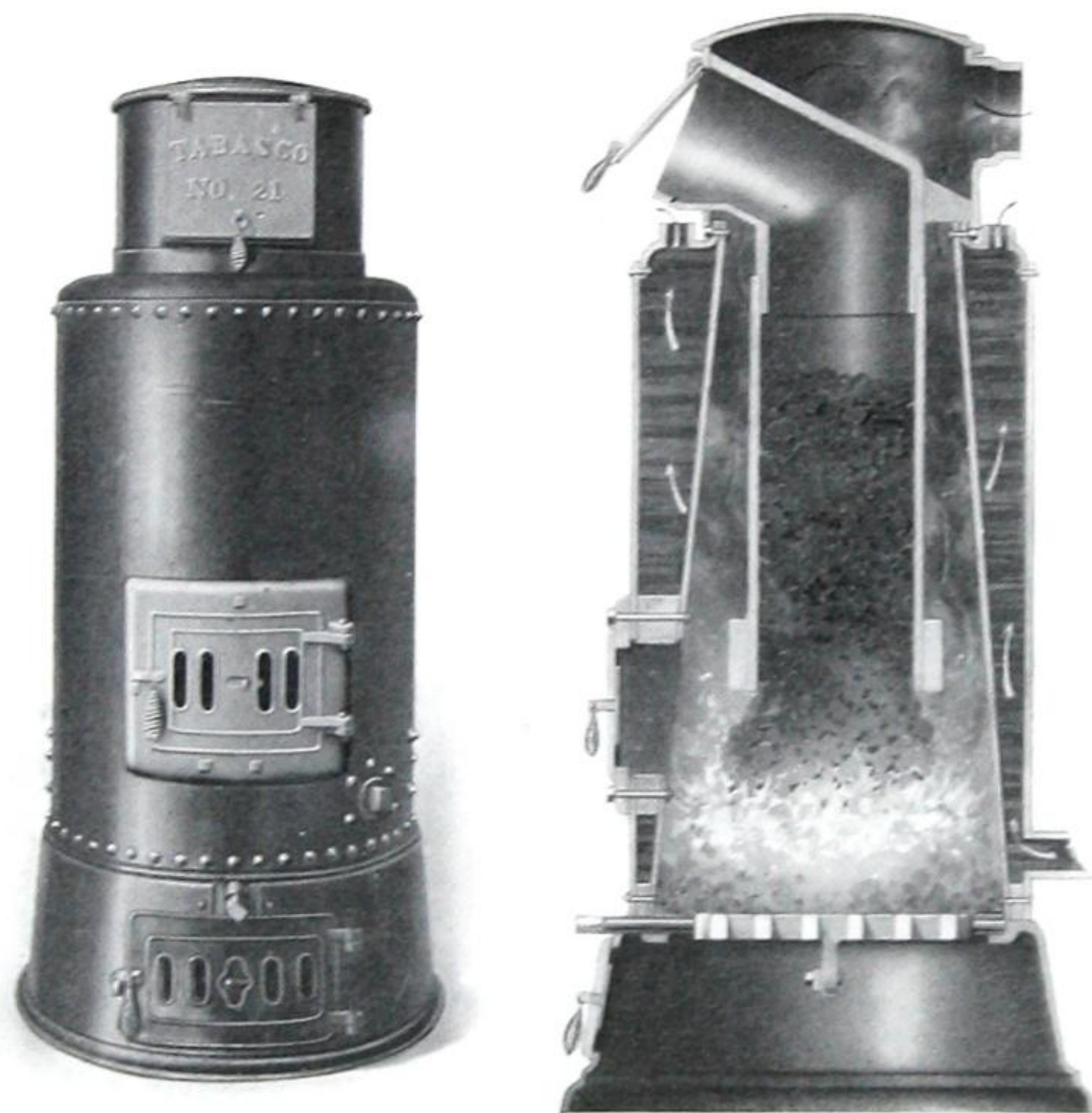
Type H

KEWANEE WATER-HEATING GARBAGE BURNERS

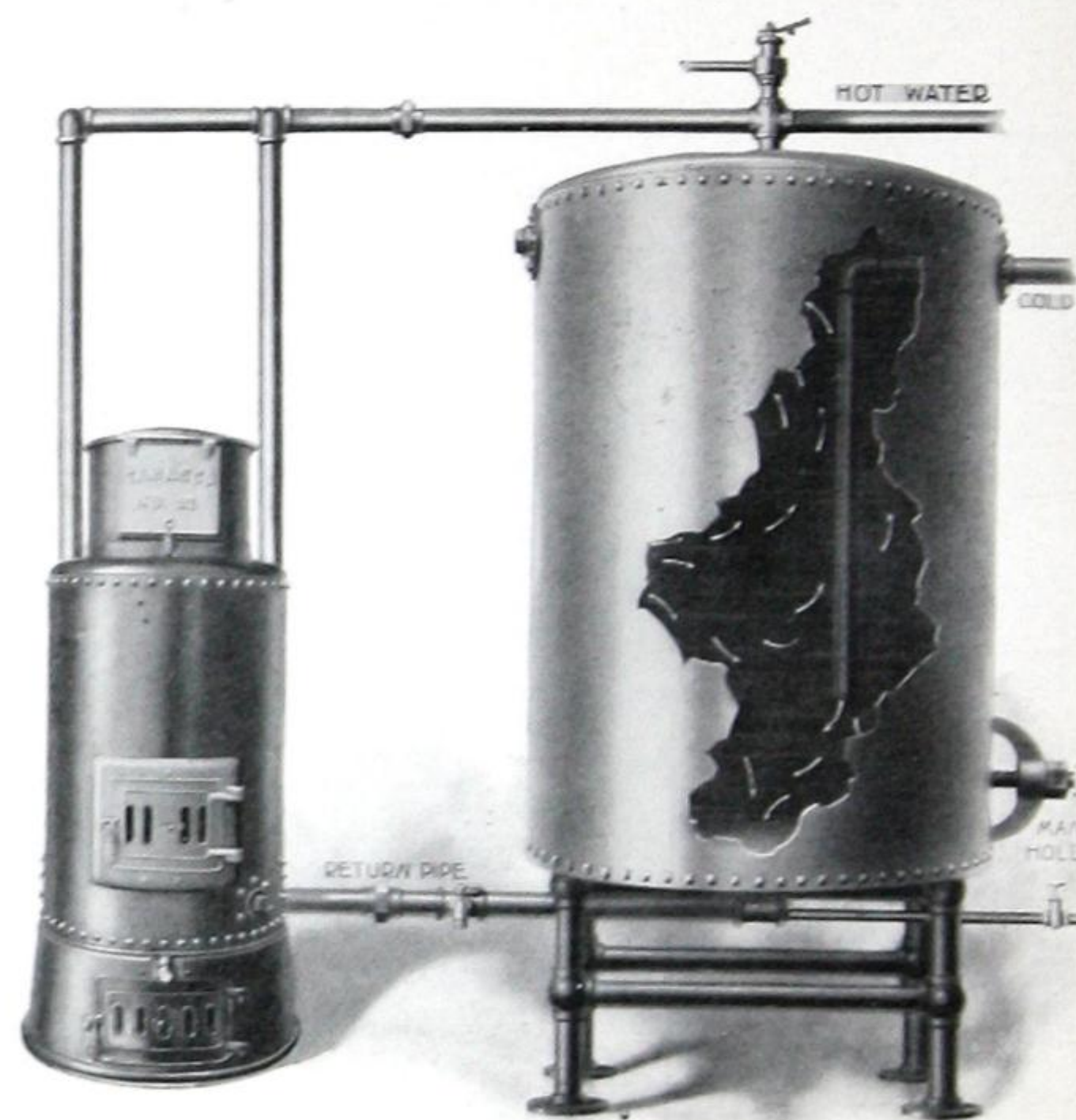
List Prices and Data

Catalogue Number	30	31	32	34	35	36	37	38
Type	A	A	A	D	D	D	D	D
Cipher	Gay	Gaze	Gear	Gain	Gale	Gamy	Gang	Gap
Capacity, gallons per hour, 50 degree raise	200	300	400	500	600	800	1000	1200
Capacity, garbage chamber one charge, bushels	1	2	3	2	3	4	5	7
Height over all, inches	58	64	64	56	56	56	56	56
Dimensions of floor space required, inches	22	25	30	29x29	29x35	35x35	35x41	35x47
Height to bottom of front garbage door, inches	33	37	37	32	32	31	31	31
Dimensions of garbage door, inches	7x8	7x8	7x8	14x16	14x16	16x16	16x16	16x16
Dimensions of coal or fire doors, inches	7x8	7x8	7x8	14x10	14x10	16x10	16x10	16x10
Diameter of coal or lower grates, inches	12	16	20	18x18	18x24	24x24	24x30	24x36
Size flow and return flanges, two each, inches	1½	2	2	2	2	2½	2½	2½
Diameter of smoke pipe, inches	6	8	8	9	9	10	10	10
Approximate shipping weight, pounds	600	800	1000	1600	1800	2100	2300	2500
List price, complete with tools	\$96.00	\$126.00	\$160.00	\$214.00	\$244.00	\$274.00	\$318.00	\$350.00
Catalogue Number	39	40	41	42	43	44	45	
Type	D	D	H	H	H	H	H	
Cipher	Garb	Gash	Gait	Game	Gasp	Germ	Gift	
Capacity gallons per hour, 50 degree raise	1500	1800	1200	1500	1800	2200	2600	
Capacity, garbage chamber one charge, bushels	9	12	6	8	9	11	12	
Height over all, inches	56	56	69	69	69	71	71	
Dimensions of floor space required, inches	41x53	41x59	38x36	38x42	38x48	38x54	38x60	
Height to bottom of front garbage door, inches	31	31	37	37	37	37	37	
Dimensions of garbage door, inches	16x16	16x16	16x16	16x16	16x16	16x16	16x16	
Dimensions of coal or fire doors, inches	16x10	16x10	16x8	16x8	16x8	16x8	16x8	
Diameter of coal or lower grates, inches	30x42	30x48	24x24	24x30	24x36	24x42	24x48	
Size, flow and return flanges, two each, inches	3	3	3	3	4	4	4	
Diameter of smoke pipe, inches	12	12	10	10	10	12	12	
Approximate shipping weight, pounds	3000	3300	2800	3100	3400	3700	4000	
List price, complete with tools	\$396.00	\$440.00	\$400.00	\$450.00	\$500.00	\$550.00	\$600.00	

One full charge of garbage can be completely destroyed on an average in one hour.
 We recommend that circulating mains and branches be covered in large installations.
 Best results are obtained when capacity of water storage tank is 50 per cent. greater than hourly capacity of the garbage burner to which it attached.

TABASCO WATER-HEATERS

All Steel—Self-Feed and Surface Burners



For Maximum Working Pressure of 60 Pounds

TABASCO WATER HEATERS

For Maximum Working Pressure of 60 Pounds

Price List and Dimensions

Heater	Cipher	Heating Capacity Gallons per Hour	Size of Heater Inches	Total Height Inches	Sizes Flows and Returns Inches	Weight Pounds	Price Magazine Feed	Price Surface Burner	Heater
17	Fabian	130	17x30	52	2-1½	400	\$72.00	\$66.00	17
18	Fable	150	17x36	57	2-1½	420	76.00	70.00	18
21	Facade	200	21x30	52	2-2	520	90.00	80.00	21
22	Facial	250	21x36	59	2-2	550	96.00	88.00	22
25	Factor	300	25x36	59	2-2	780	126.00	116.00	25
26	Faculty	350	25x42	65	2-2	810	132.00	122.00	26
27	Facund	400	25x48	71	2-2	840	142.00	130.00	27
30	Faddle	500	30x42	65	2-3	1100	160.00	144.00	30
31	Faggot	600	30x48	75	2-3	1150	168.00	156.00	31
32	Faint	700	30x54	81	2-3	1240	176.00	164.00	32

"EXTRA HEAVY" TABASCO HEATERS—TYPE R

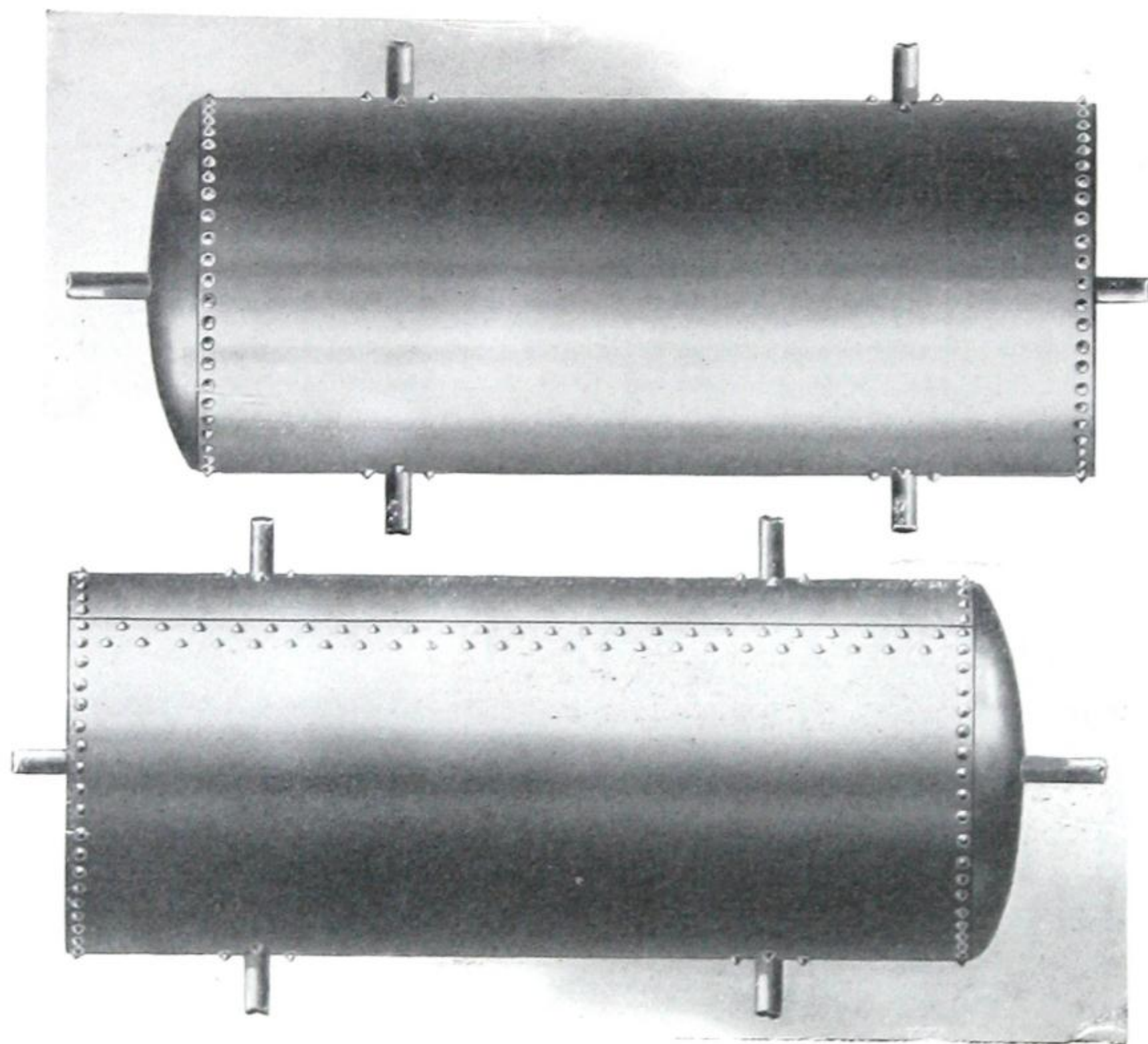
Good for a Working Pressure of 100 Pounds

150	Goss	150	12"	4' 10"	2-1½"	600	\$106.00	.....	150
200	Gode	200	16"	5' 3"	2-2"	700	128.00	.....	200
300	Gore	300	20"	5' 4"	2-2"	950	158.00	.....	300
400	Goad	400	20"	5' 10"	2-2"	1130	180.00	.....	400
500	Golf	500	25"	6' 4"	2-3"	1500	210.00	.....	500
700	Gown	700	25"	7' 2"	2-3"	1650	230.00	.....	700

Magazine Feed Heaters are always shipped unless Surface Burners are specified in order. Heaters are provided with brass clean-out plugs.

On all Tabasco Heaters the heating capacity is based on raising the water in the storage tank 50 degrees Fahrenheit in one hour.

TANKS



STANDARD TANKS

Tested to 100 pounds hydrostatic pressure, and for use where water working-pressure does not exceed 65 pounds. Regularly made with openings so that they may be used horizontally or vertically. Manholes, handholes, and coils furnished only when specially ordered. We recommend that tanks containing coils be made with a manhole.

EXTRA HEAVY TANKS

Tested to 150 pounds hydrostatic pressure, and for use where water working-pressure does not exceed 100 pounds. For tanks for greater pressure, prices and specifications will be submitted on application.

TANKS

STANDARD TANKS

List Prices and Data

EXTRA HEAVY TANKS

Capacity Gallons	Size	Approx. Shipping Weight	Open'gs	List Price	Size Coil Pipes Ins.	Plain Coil	Galv. Coil	Capacity Gallons	Size	Thick- ness Shell Inches	Convex Head Inches	Concave Head Inches	Approx. Shipping Weight	Size Openings Inches	List Price
66	20x 4	225	1½	\$ 43	4 1	\$18	\$22	120	24x 5	⅜	¼	⅝	410	1½	\$ 60
85	20x 5	260	1½	45	4 1	19	24	140	24x 6	⅜	¼	⅝	470	1½	65
100	24x 4	280	1½	47	4 1¼	22	26	180	30x 5	⅜	¼	⅝	530	2	70
120	24x 5	325	1½	50	4 1¼	23	28	220	30x 6	⅜	¼	⅝	600	2	78
140	24x 6	360	1½	54	4 1¼	24	30	250	30x 7	⅜	¼	⅝	670	2	86
150	30x 4	425	2	56	4 1¼	22	26	295	30x 8	⅜	¼	⅝	750	2	94
180	30x 5	490	2	60	4 1¼	23	28	315	36x 6	¼	⅝	⅜	950	2	108
220	30x 6	555	2	66	4 1¼	24	30	365	36x 7	⅜	¼	⅝	1060	2	118
250	30x 7	620	2	72	4 1¼	25	32	420	36x 8	⅜	¼	⅝	1170	2	128
295	30x 8	685	2	78	4 1¼	26	34	525	36x10	⅜	¼	⅝	1390	2	148
315	36x 6	740	2	82	4 1½	32	39	430	42x 6	⅜	¼	⅝	1140	2	126
365	36x 7	825	2	90	4 1½	34	42	500	42x 7	⅜	¼	⅝	1270	2	138
420	36x 8	910	2	98	4 1½	36	44	575	42x 8	⅜	¼	⅝	1400	2	150
525	36x10	1080	2	112	4 1½	40	49	720	42x10	⅜	¼	⅝	1660	2	174
430	42x 6	890	2	106	4 1½	32	39	865	42x12	⅜	¼	⅝	1940	2	198
500	42x 7	985	2	114	4 1½	34	42	1000	42x14	⅜	¼	⅝	2200	2	222
575	42x 8	1080	2	124	4 1½	36	44	750	48x 8	⅜	¼	⅝	1600	3	178
720	42x10	1270	2	140	4 1½	40	49	940	48x10	⅜	¼	⅝	1900	3	204
865	42x12	1460	2	158	4 1½	44	53	1130	48x12	⅜	¼	⅝	2200	3	230
000	42x14	1650	2	176	4 1½	48	58	1300	48x14	⅜	¼	⅝	2500	3	256
								1500	48x16	⅜	¼	⅝	2800	3	282
								1700	48x18	⅜	¼	⅝	3100	3	308

Flanged openings add to list for each opening:

2" or 2½"—\$5.00; 3" or 3½"—\$6.00; 4"—\$7.00.

Manhole in head, \$20.00; in shell, \$30.00.

Handhole in head or shell, \$6.00.

For Extras, Coils, etc., list same as used for Standard Tanks.

THE ECLIPSE HOT WATER SERVICE TANK AND CIRCULATOR



Illustrating coil partly drawn out

THE ECLIPSE HOT WATER SERVICE TANK

Designed especially for the City of Winnipeg and localities where the storage tank has to be frequently cleaned, and where it has been found advantageous to heat water for domestic purposes by steam.

Especially adapted for apartment blocks, hospitals, hotels, restaurants, and office buildings where large quantities of hot water are continually being used.

Built of $\frac{1}{4}$ inch steel plate with $\frac{5}{16}$ and $\frac{3}{8}$ inch heads, tested to 100 pounds water pressure.

Diameter Inches	Length Feet	Capacity Gallons	List Price Black Iron	Diameter Inches	Length Feet	Capacity Gallons	List Price Black Iron
30	6	220	\$160.00	36	8	420	\$215.00
30	7	250	170.00	42	7	500	230.00
30	8	295	180.00	42	8	575	250.00
36	7	365	200.00	42	10	720	270.00

Coil Head Openings:—Steam supply, 2 inches; Steam return, $1\frac{1}{4}$ inches. Tank Openings:—Two 2 inches on top, one 2 inch on bottom; one 1 inch on bottom for circulation. Regularly equipped with galvanized iron pipe coils, but can be furnished with brass or copper coils at a special price.

THE ECLIPSE HOT WATER CIRCULATOR

Designed for installations where a regular type Hot Water Storage Tank is used, and where it is desired to heat the water by steam. Connections between storage tank and circulator should be valved, to permit cleaning of circulator without emptying the water in the tank. Regularly equipped with galvanized iron coils but can be furnished with brass or copper coils at a special price.

Six foot coil (length over all 6 feet $9\frac{1}{2}$ inches), List price, \$70.00. Other sizes upon application.

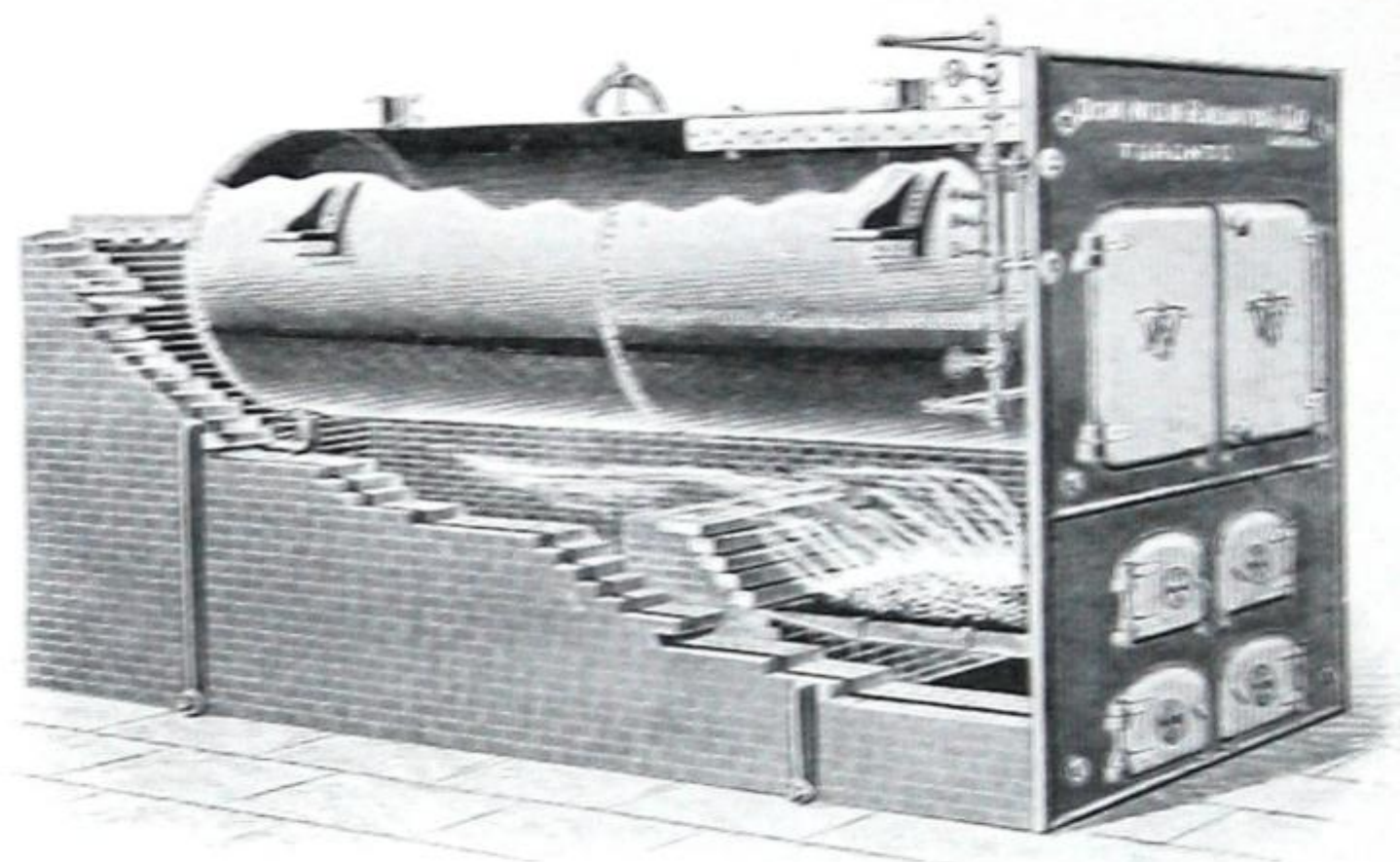
Coil Head Openings:—Steam supply, 2 inches; Steam return, $1\frac{1}{4}$ inches.

Circulator Openings:—Supply and return, each $2\frac{1}{2}$ inches.

NOTE:—In specifying Eclipse Storage Tanks, it is recommended to figure a capacity in apartment house-work of at least 15 gallons per suite. For capacity of steam boiler required to heat same, or for Tanks connected to Eclipse Circulators, figure one and a quarter square feet per gallon. For restaurants and extra heavy service, two square feet per gallon is advisable. Water line of steam boiler must be at least six inches below tank or circulator.

It is also recommended that the steam boiler, tank and circulator be covered with mineral wool, asbestos or some other satisfactory covering.

HORIZONTAL RETURN TUBULAR STATIONARY BOILERS



HORIZONTAL RETURN TUBULAR STATIONARY BOILERS**Standard Dimensions of Low Pressure Steam Heating Boilers**

Diameter of Boiler, ins.	36	36	42	42	42	48	48	48	54	54	60	60	60	66	66	72	72
Length of Boiler.....ft.	10	12	10	12	14	10	12	14	12	14	12	14	16	14	16	14	16
No. of Tubes, 3 ins....	32	32	38	38	38	44	44	44	56	56	70	70	16	92	16	108	16
No. of Tubes, 3½ ins..													54	92	72	108	92
Total Heating Surface square feet.....	305	365	363	434	504	420	503	584	628	730	774	899	937	1156	1217	1344	1500
Grate Area, sq. ft.....	9	11	10.7	12.9	12.9	12	14.6	14.6	16.5	16.5	18.2	21	23.9	22.9	26.1	24.7	28
Thickness of Shell, ins.	¼	¼	¼	¼	¼	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Thickness of Heads, ins.	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Diameter of Stack, ins.	18	18	20	20	20	22	22	22	24	24	26	26	28	30	30	34	34
Diameter of Outlet, in.	4	4	5	5	5	6	6	6	6	6	7	7	7	8	8	8	8
Diam. of Return, ins..	3	3	4	4	4	5	5	5	5	5	6	6	6	7	7	7	7
Diam. Safety Valve, inches.....	3	3	3	3½	3½	3	3½	3½	3½	3½	4	4	2-3	2-3	2-3½	2-3½	2-3½
Total Height, feet-ins.	6-11½	6-11½	7-1	7-1	7-1	7-6	7-6	7-6	8-4½	8-4½	9-3	9-3	9-3	10-2	10-2	10-11	10-11
List Price.....	\$500	\$550	\$600	\$650	\$700	\$740	\$800	\$860	\$920	\$1000	\$1080	\$1180	\$1280	\$1400	\$1520	\$1690	\$1800
Weight of Boiler, with Fixtures, lbs.....	4850	5350	5800	6400	7000	7400	8200	9000	10100	11000	12000	13250	14500	16100	17500	18750	20500
Common Brick.....	6500	7000	8000	9000	10000	10500	11000	12000	12500	13000	14000	15500	17000	17500	18000	19000	19500
Fire Brick.....	600	650	700	700	700	800	800	800	900	900	950	950	950	1000	1000	1050	1050
Horse Power at 15 to 1 Rating.....	20	25	25	30	34	28	34	39	42	49	52	60	63	77	81	90	100

Note:—Under Ontario Government Laws, all H.R.T. Boilers, 48" diameter and over, have a man-hole in the front head, as well as in the shell. It is because of this that the H.P. rating of 42" Boilers is much the same as the H.P. ratings of 48" Boilers.

All Boilers below 48" have man-hole in shell and hand-hole in each head.

H.R.T. Boilers used for heating purposes only, do not require to be suspended. H.R.T. Boilers used for heating purposes are only allowed to carry a working pressure of 15 pounds. The heating power of these Boilers, as expressed in square feet of direct radiation, is estimated at 100 sq. ft. for each H.P. Where Boilers are required to be equipped with shaking grates, add \$4.50 per square foot of grate (net).

Fixtures include full cast iron front and doors, grate bars, bearers, arch plate, dead plate, back arch bars, soot door and frame, steam gauge, water gauge, gauge cocks, spring loaded safety valve, feed valve, check valve, and asbestos packed stop cock, firing tools and automatic damper regulator.

Discounts quoted on application.

INFORMATION REQUIRED FOR ORDERING BOILERS AND BOILER REPAIRS

State plainly the catalogue, name, number and rated capacity of Boiler required; also number of square feet of Direct, and if any, Direct-Indirect or Hot Blast Radiation, that Boiler is to take care of.

When ordering repair parts for any of the Boilers listed in this catalogue, or for that matter for any other Boiler, first give the size, number and catalogue name, or name on front of the Boiler. Next give the factory or serial number. This is usually found on the little brass plate on one of the front doors. It is well to mention all letters or numbers in order in which they appear on part required. In case it is impossible to give any of the above requirements, send a sketch having dimensions marked on it, and a rough detailed description of part wanted. It will also be well to mention year number where same appears on front of Boiler, and if possible, the year in which the Boiler was installed, or better still, the date and number of the invoice pertaining to it. Especially mention whether the boiler is Round or Square. Where Round, if it is a grate bar that is required, mention which one, numbering from the front, and whether it has a lug or hook on it. If it is a section that is required, mention which one numbering from the Fire-pot. If it is a door or door-frame, especially mention which one.

Where section is required for a Sectional Boiler, mention which one, numbering from the front and whether same has any tapped openings, and the size of the tapping, and whether the tapping is required or not. Where it is a grate bar, mention which one numbering from the front, and whether it shakes on the left-hand side or the right-hand side.

Where a Boiler has no serial number on the little brass plate, please mention the fact that it has no serial number.

When ordering repairs for a Boiler, send order direct to the Office or Branch from which Boiler was purchased.

With these particulars we will be able to ship repairs promptly.

Give full shipping instructions.

SAFFORD RADIATORS

STEAM AND WATER



ALL SAFFORD radiator sections are connected together with heavy malleable iron right and left nipples.

MANUFACTURED BY

THE

DOMINION RADIATOR COMPANY
LIMITED

St. John

Montreal

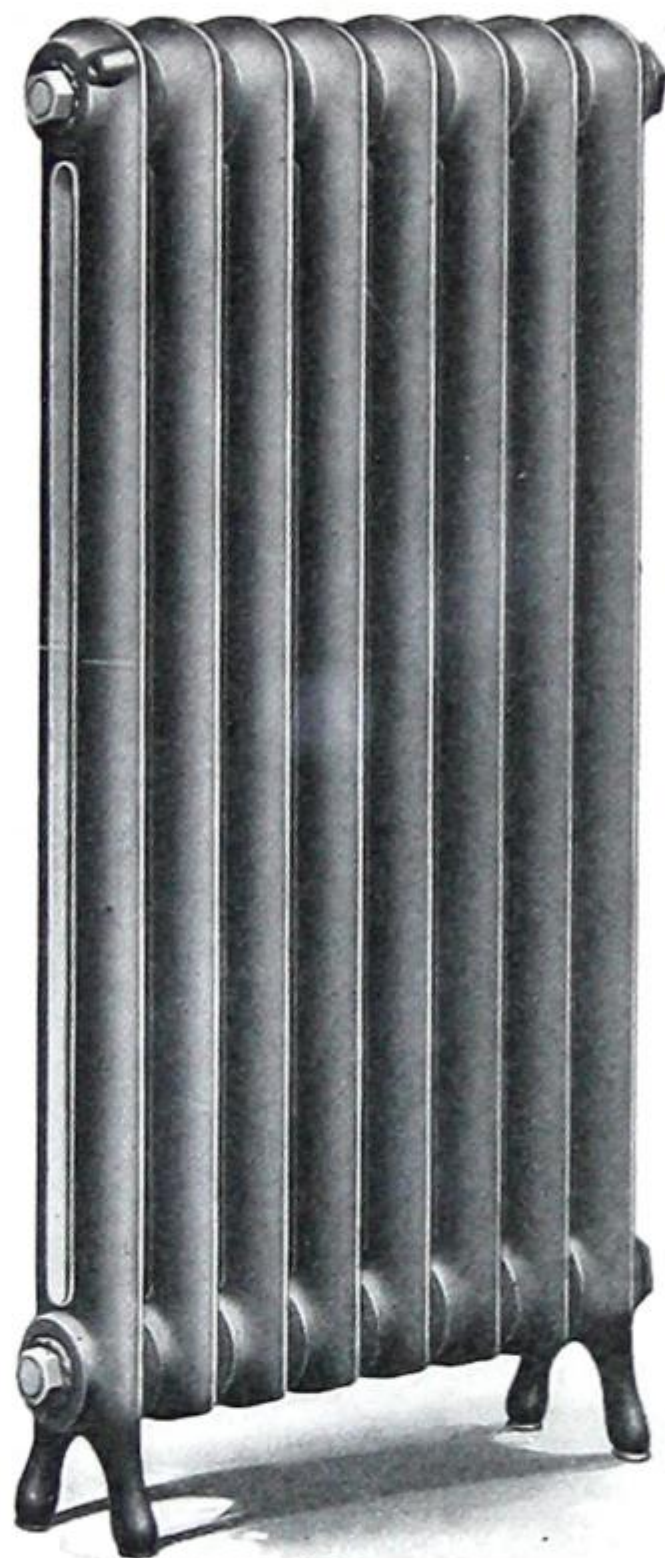
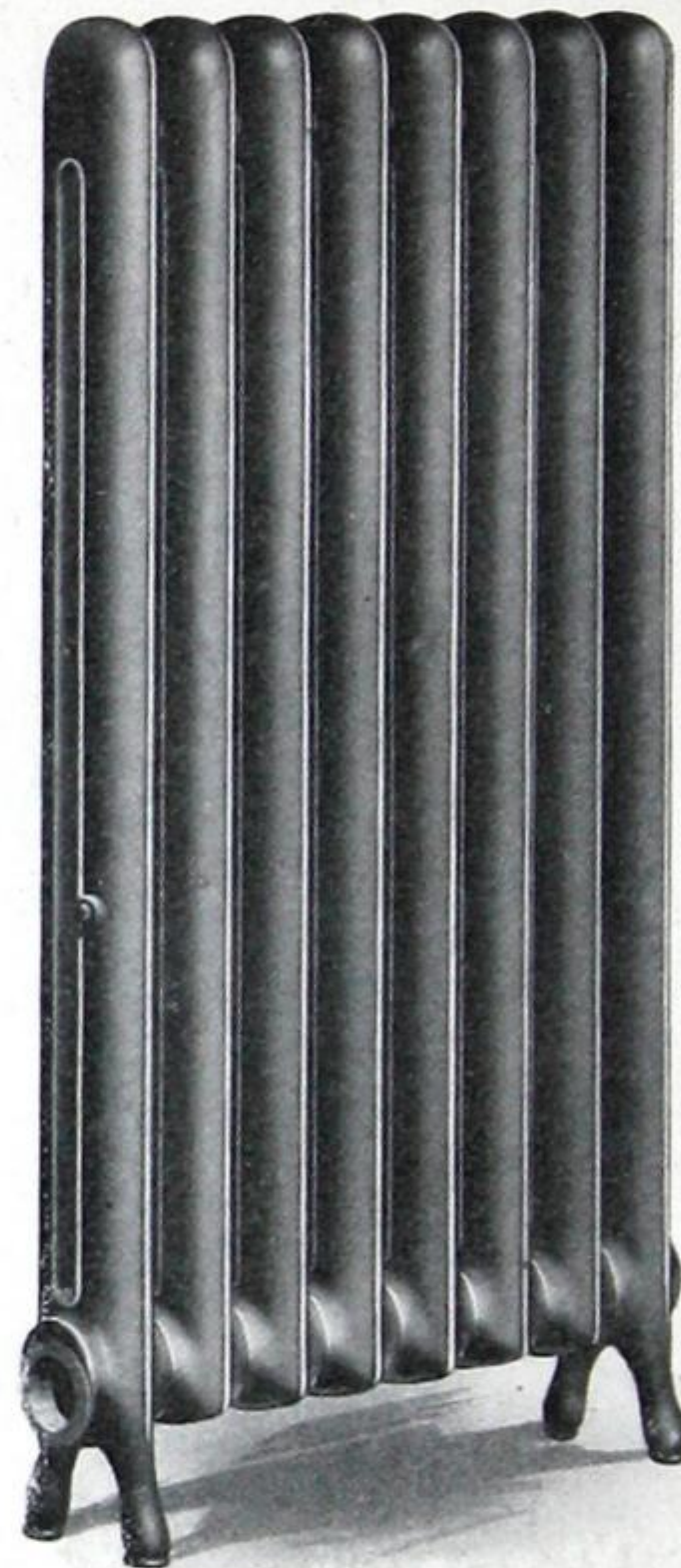
Hamilton

TORONTO

Winnipeg

Calgary

Vancouver

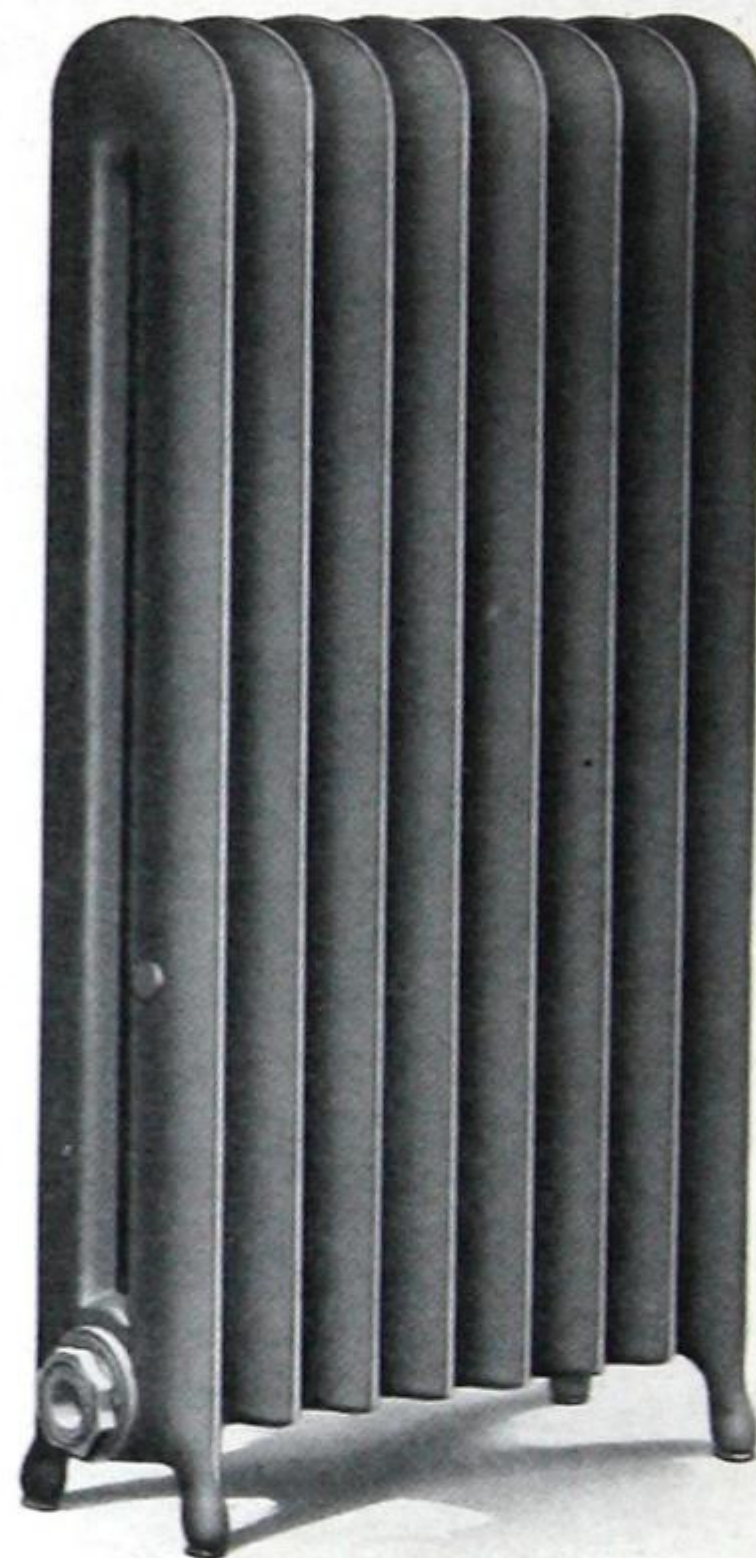
SAFFORD RADIATORS**WATER****SAXON****ONE-COLUMN
PLAIN****STEAM**

SAFFORD RADIATORS
SAXON ONE-COLUMN PLAIN RADIATORS
 FOR STEAM OR WATER CAPACITIES AND DIMENSIONS

No. of Sections	* Length 2½" per Section	HEATING SURFACE									
		38" in Height		32" in Height		26" in Height		23" in Height		20" in Height	
		3 Sq. Ft. per Section	Equivalent 1-in. Pipe	2½ Sq. Ft. per Section	Equivalent 1-in. Pipe	2 Sq. Ft. per Section	Equivalent 1-in. Pipe	1⅔ Sq. Ft. per Section	Equivalent 1-in. Pipe	1½ Sq. Ft. per Section	Equivalent 1-in. Pipe
2	5	6	18	5	15	4	12	3⅓	10	3	9
3	7½	9	27	7½	22½	6	18	5	15	4½	13½
4	10	12	36	10	30	8	24	6⅔	20	6	18
5	12½	15	45	12½	37½	10	30	8⅓	25	7½	22½
6	15	18	54	15	45	12	36	10	30	9	27
7	17½	21	63	17½	52½	14	42	11⅓	35	10½	31½
8	20	24	72	20	60	16	48	13⅓	40	12	36
9	22½	27	81	22½	67½	18	54	15	45	13½	40½
10	25	30	90	25	75	20	60	16⅔	50	15	45
11	27½	33	99	27½	82½	22	66	18⅓	55	16½	49½
12	30	36	108	30	90	24	72	20	60	18	54
13	32½	39	117	32½	97½	26	78	21⅓	65	19½	58½
14	35	42	126	35	105	28	84	23⅓	70	21	63
15	37½	45	135	37½	112½	30	90	25	75	22½	67½
16	40	48	144	40	120	32	96	26⅔	80	24	72
17	42½	51	153	42½	127½	34	102	28⅓	85	25½	76½
18	45	54	162	45	135	36	108	30	90	27	81
19	47½	57	171	47½	142½	38	114	31⅓	95	28½	85½
20	50	60	180	50	150	40	120	33⅓	100	30	90
21	52½	63	189	52½	157½	42	126	35	105	31½	94½
22	55	66	198	55	165	44	132	36⅔	110	33	99
23	57½	69	207	57½	172½	46	138	38⅓	115	34½	103½
24	60	72	216	60	180	48	144	40	120	36	108
25	62½	75	225	62½	187½	50	150	41⅓	125	37½	112½

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 4½ inches, width of legs 5¼ inches. Additional measurements on pages 202 and 203. Made in single connection only
 Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**WATER****SAXON****TWO-COLUMN
PLAIN****STEAM**

SAFFORD RADIATORS**SAXON TWO-COLUMN PLAIN RADIATORS**

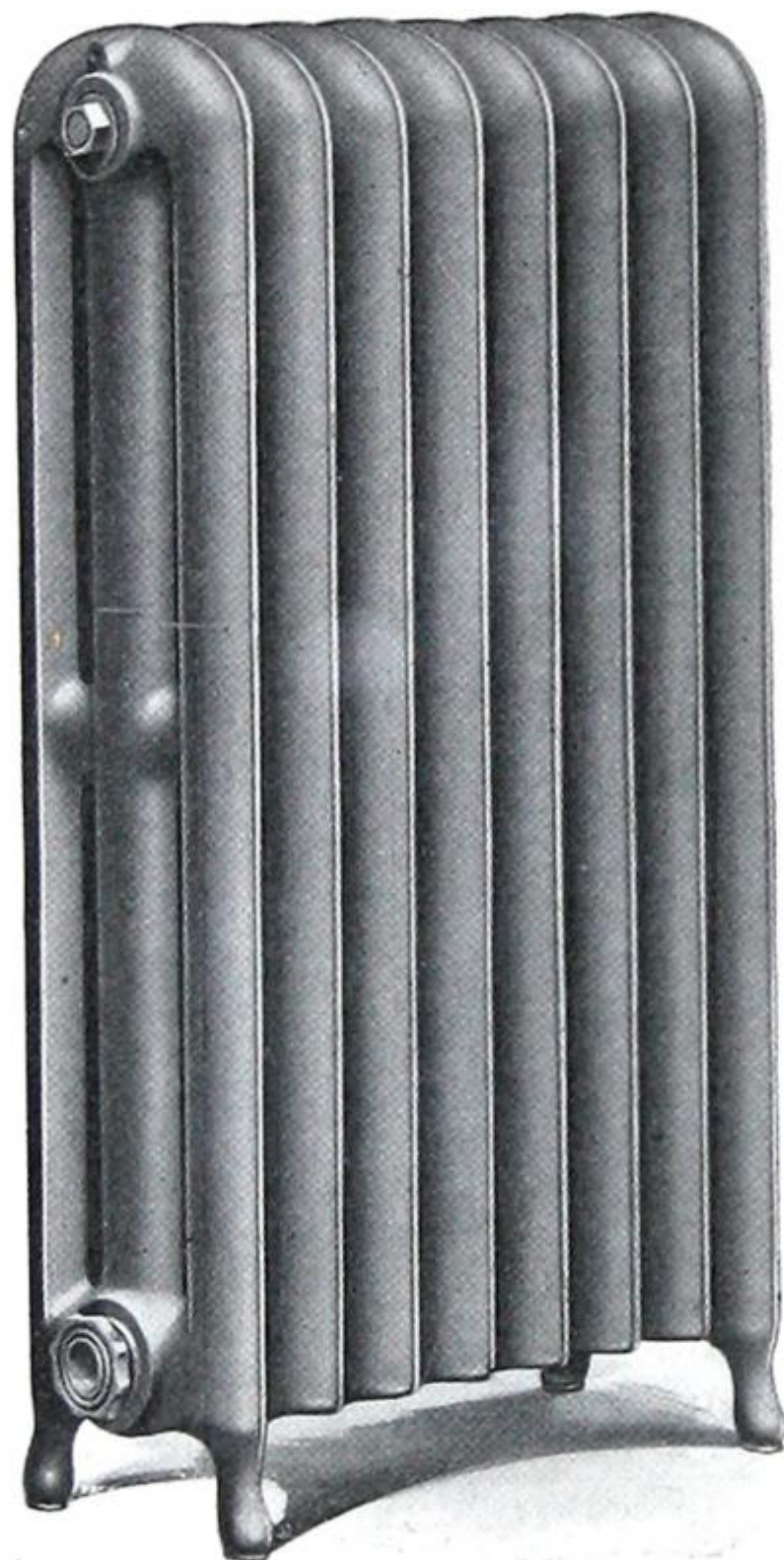
FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length 2½ in. per Section	HEATING SURFACE													
		45" in Height		38" in Height		32" in Height		30" in Height		26" in Height		23" in Height		20" in Height	
		Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	5	10	30	8	24	6⅔	20	6	18	5⅓	16	4⅔	14	4	12
3	7½	15	45	12	36	10	30	9	27	8	24	7	21	6	18
4	10	20	60	16	48	13⅓	40	12	36	10⅔	32	9⅓	28	8	24
5	12½	25	75	20	60	16⅔	50	15	45	13⅓	40	11⅔	35	10	30
6	15	30	90	24	72	20	60	18	54	16	48	14	42	12	36
7	17½	35	105	28	84	23⅓	70	21	63	18⅔	56	16⅓	49	14	42
8	20	40	120	32	96	26⅔	80	24	72	21⅓	64	18⅔	56	16	48
9	22½	45	135	36	108	30	90	27	81	24	72	21	63	18	54
10	25	50	150	40	120	33⅓	100	30	90	26⅔	80	23⅓	70	20	60
11	27½	55	165	44	132	36⅔	110	33	99	29⅓	88	25⅔	77	22	66
12	30	60	180	48	144	40	120	36	108	32	96	28	84	24	72
13	32½	65	195	52	156	43⅓	130	39	117	34⅔	104	30⅓	91	26	78
14	35	70	210	56	168	46⅔	140	42	126	37⅓	112	32⅔	98	28	84
15	37½	75	225	60	180	50	150	45	135	40	120	35	105	30	90
16	40	80	240	64	192	53⅓	160	48	144	42⅔	128	37⅓	112	32	96
17	42½	85	255	68	204	56⅔	170	51	153	45⅓	136	39⅔	119	34	102
18	45	90	270	72	216	60	180	54	162	48	144	42	126	36	108
19	47½	95	285	76	228	63⅓	190	57	171	50⅔	152	44⅓	133	38	114
20	50	100	300	80	240	66⅔	200	60	180	53⅓	160	46⅔	140	40	120
21	52½	105	315	84	252	70	210	63	189	56	168	49	147	42	126
22	55	110	330	88	264	73⅓	220	66	198	58⅔	176	51⅓	154	44	132
23	57½	115	345	92	276	76⅔	230	69	207	61⅓	184	53⅔	161	46	138
24	60	120	360	96	288	80	240	72	216	64	192	56	168	48	144
25	62½	125	375	100	300	83⅓	250	75	225	66⅔	200	58⅓	175	50	150

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 7⅜ inches, width of legs 8¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**WATER****SAXON
THREE-COLUMN
PLAIN****STEAM**

SAFFORD RADIATORS

SAXON THREE-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

HEATING SURFACE

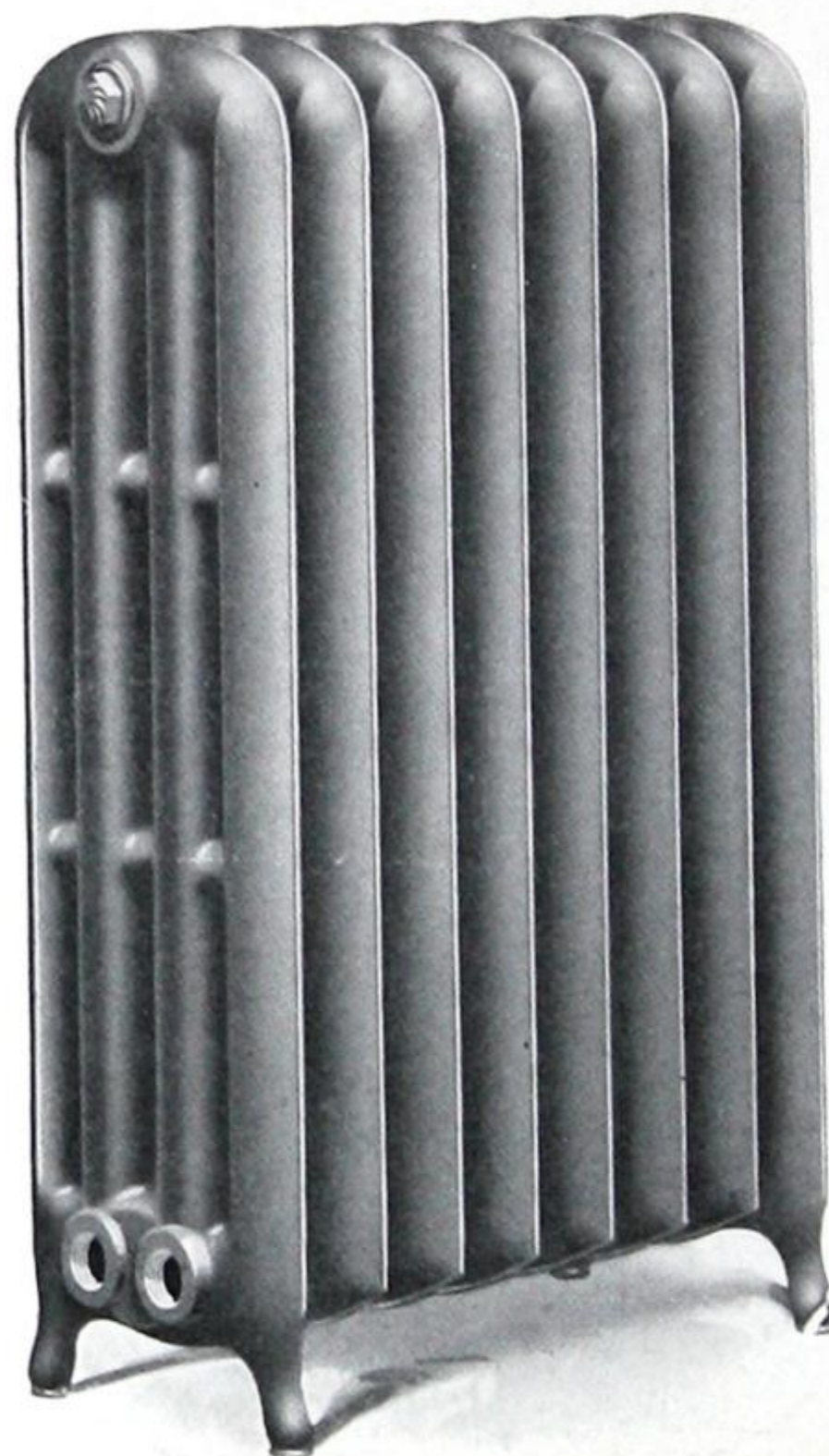
No. of Sections	* Length 2½ in. per Section	44" in Height		38" in Height		32" in Height		26" in Height		22" in Height		18" in Height	
		Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	5	12	36	10	30	9	27	7½	22½	6	18	4½	13½
3	7½	18	54	15	45	13½	40½	11¼	33¾	9	27	6¾	20¼
4	10	24	72	20	60	18	54	15	45	12	36	9	27
5	12½	30	90	25	75	22½	67½	18¾	56¼	15	45	11¼	33¾
6	15	36	108	30	90	27	81	22½	67½	18	54	13½	40½
7	17½	42	126	35	105	31½	94½	26¼	78¾	21	63	15¾	47¼
8	20	48	144	40	120	36	108	30	90	24	72	18	54
9	22½	54	162	45	135	40½	121½	33¾	101¼	27	81	20¼	60¾
10	25	60	180	50	150	45	135	37½	112½	30	90	22½	67½
11	27½	66	198	55	165	49½	148½	41¼	123¾	33	99	24¾	74¼
12	30	72	216	60	180	54	162	45	135	36	108	27	81
13	32½	78	234	65	195	58½	175½	48¾	146¼	39	117	29¼	87¾
14	35	84	252	70	210	63	189	52½	157½	42	126	31½	94½
15	37½	90	270	75	225	67½	202½	56¼	168¾	45	135	33¾	101¼
16	40	96	288	80	240	72	216	60	180	48	144	36	108
17	42½	102	306	85	255	76½	229½	63¾	191¼	51	153	38¼	114¾
18	45	108	324	90	270	81	243	67½	202½	54	162	40½	121½
19	47½	114	342	95	285	85½	256½	71¼	213¾	57	171	42¾	128¼
20	50	120	360	100	300	90	270	75	225	60	180	45	135
21	52½	126	378	105	315	94½	283½	78¾	236¼	63	189	47¼	141¾
22	55	132	396	110	330	99	297	82½	247½	66	198	49½	148½
23	57½	138	414	115	345	103½	310½	86¼	258¾	69	207	51¾	155¼
24	60	144	432	120	360	108	324	90	270	72	216	54	162
25	62½	150	450	125	375	112½	337½	93¾	281¼	75	225	56¼	168¾

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 9 inches, width of legs 9¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

SAXON
FOUR-COLUMN
PLAIN



FOR
STEAM OR
WATER

SAFFORD RADIATORS**SAXON FOUR-COLUMN PLAIN RADIATORS**

FOR STEAM OR WATER

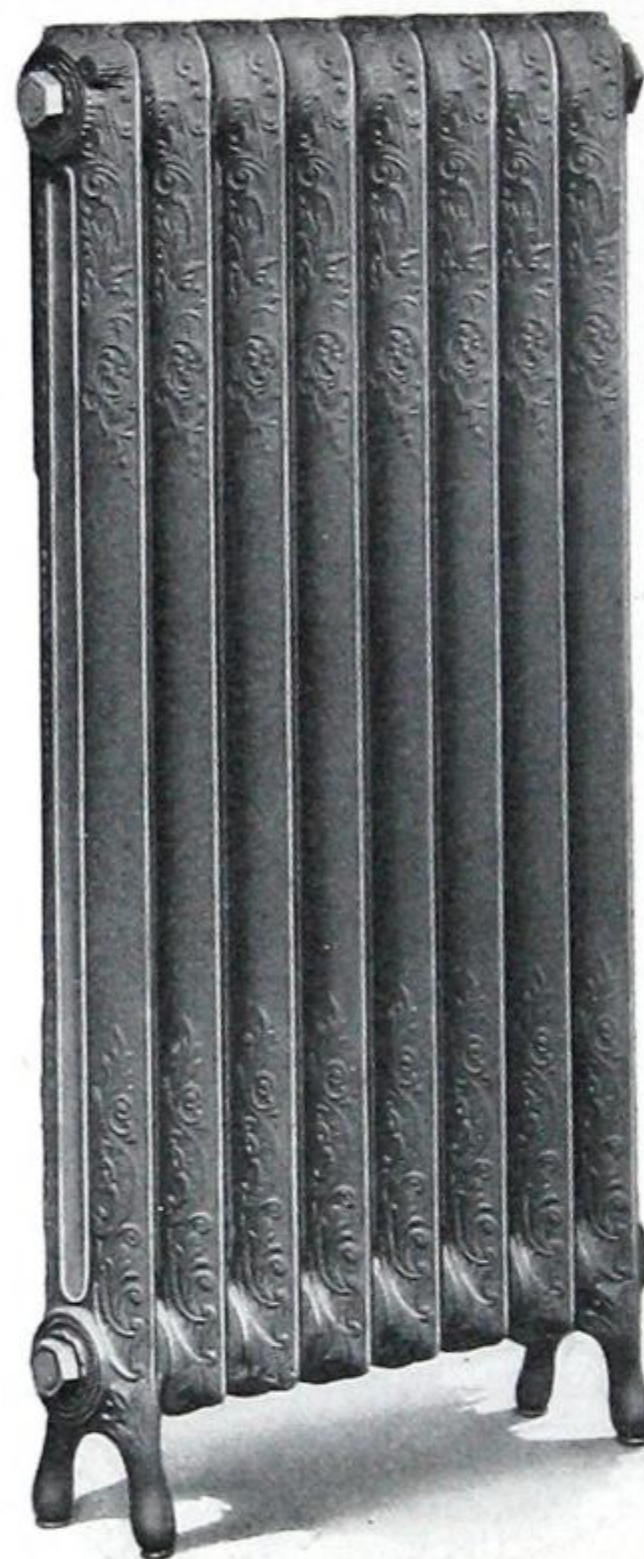
CAPACITIES AND DIMENSIONS

No. of Sections	* Length 3 in. per Section	HEATING SURFACE													
		45" in Height		38" in Height		32" in Height		26" in Height		22" in Height		20" in Height		18" in Height	
		10 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	8 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	6½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	4 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	6	20	60	16	48	13	39	10	30	8	24	7	21	6	18
3	9	30	90	24	72	19½	58½	15	45	12	36	10½	31½	9	27
4	12	40	120	32	96	26	78	20	60	16	48	14	42	12	36
5	15	50	150	40	120	32½	97½	25	75	20	60	17½	52½	15	45
6	18	60	180	48	144	39	117	30	90	24	72	21	63	18	54
7	21	70	210	56	168	45½	136½	35	105	28	84	24½	73½	21	63
8	24	80	240	64	192	52	156	40	120	32	96	28	84	24	72
9	27	90	270	72	216	58½	175½	45	135	36	108	31½	94½	27	81
10	30	100	300	80	240	65	195	50	150	40	120	35	105	30	90
11	33	110	330	88	264	71½	214½	55	165	44	132	38½	115½	33	99
12	36	120	360	96	288	78	234	60	180	48	144	42	126	36	108
13	39	130	390	104	312	84½	253½	65	195	52	156	45½	136½	39	117
14	42	140	420	112	336	91	273	70	210	56	168	49	147	42	126
15	45	150	450	120	360	97½	292½	75	225	60	180	52½	157½	45	135
16	48	160	480	128	384	104	312	80	240	64	192	56	168	48	144
17	51	170	510	136	408	110½	331½	85	255	68	204	59½	178½	51	153
18	54	180	540	144	432	117	351	90	270	72	216	63	189	54	162
19	57	190	570	152	456	123½	370½	95	285	76	228	66½	199½	57	171
20	60	200	600	160	480	130	390	100	300	80	240	70	210	60	180
21	63	210	630	168	504	136½	409½	105	315	84	252	73½	220½	63	189
22	66	220	660	176	528	143	429	110	330	88	264	77	231	66	198
23	69	230	690	184	552	149½	448½	115	345	92	276	80½	241½	69	207
24	72	240	720	192	576	156	468	120	360	96	288	84	252	72	216
25	75	250	750	200	600	162½	487½	125	375	100	300	87½	262½	75	225

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 3 inches, width of legs 11¾ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**VICTORIA****ONE-COLUMN
ORNAMENTAL****FOR
STEAM OR
WATER**

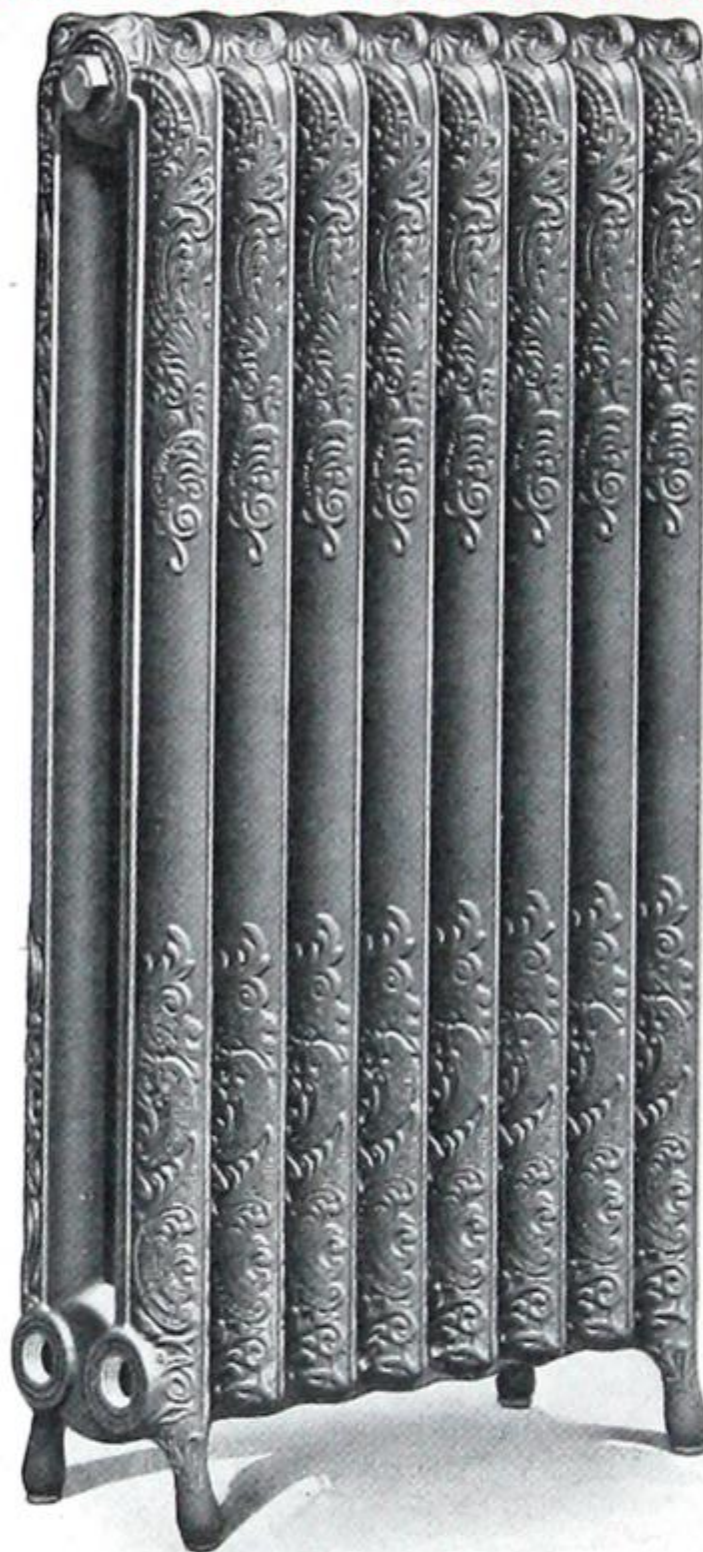
SAFFORD RADIATORS

VICTORIA ONE-COLUMN ORNAMENTAL RADIATORS
FOR STEAM OR WATER **CAPACITIES AND DIMENSIONS**

No. of Sections	* Length $2\frac{1}{2}$ " per Section	HEATING SURFACE									
		38" in Height		32" in Height		26" in Height		23" in Height		20" in Height	
		3 Sq. Ft. per Section	Equivalent 1-in. Pipe	$2\frac{1}{2}$ Sq. Ft. per Section	Equivalent 1-in. Pipe	2 Sq. Ft. per Section	Equivalent 1-in. Pipe	$1\frac{2}{3}$ Sq. Ft. per Section	Equivalent 1-in. Pipe	$1\frac{1}{2}$ Sq. Ft. per Section	Equivalent 1-in. Pipe
2	5	6	18	5	15	4	12	$3\frac{1}{3}$	10	3	9
3	$7\frac{1}{2}$	9	27	$7\frac{1}{2}$	$22\frac{1}{2}$	6	18	5	15	$4\frac{1}{2}$	$13\frac{1}{2}$
4	10	12	36	10	30	8	24	$6\frac{2}{3}$	20	6	18
5	$12\frac{1}{2}$	15	45	$12\frac{1}{2}$	$37\frac{1}{2}$	10	30	$8\frac{1}{3}$	25	$7\frac{1}{2}$	$22\frac{1}{2}$
6	15	18	54	15	45	12	36	10	30	9	27
7	$17\frac{1}{2}$	21	63	$17\frac{1}{2}$	$52\frac{1}{2}$	14	42	$11\frac{2}{3}$	35	$10\frac{1}{2}$	$31\frac{1}{2}$
8	20	24	72	20	60	16	48	$13\frac{1}{3}$	40	12	36
9	$22\frac{1}{2}$	27	81	$22\frac{1}{2}$	$67\frac{1}{2}$	18	54	15	45	$13\frac{1}{2}$	$40\frac{1}{2}$
10	25	30	90	25	75	20	60	$16\frac{2}{3}$	50	15	45
11	$27\frac{1}{2}$	33	99	$27\frac{1}{2}$	$82\frac{1}{2}$	22	66	$18\frac{1}{3}$	55	$16\frac{1}{2}$	$49\frac{1}{2}$
12	30	36	108	30	90	24	72	20	60	18	54
13	$32\frac{1}{2}$	39	117	$32\frac{1}{2}$	$97\frac{1}{2}$	26	78	$21\frac{2}{3}$	65	$19\frac{1}{2}$	$58\frac{1}{2}$
14	35	42	126	35	105	28	84	$23\frac{1}{3}$	70	21	63
15	$37\frac{1}{2}$	45	135	$37\frac{1}{2}$	$112\frac{1}{2}$	30	90	25	75	$22\frac{1}{2}$	$67\frac{1}{2}$
16	40	48	144	40	120	32	96	$26\frac{2}{3}$	80	24	72
17	$42\frac{1}{2}$	51	153	$42\frac{1}{2}$	$127\frac{1}{2}$	34	102	$28\frac{1}{3}$	85	$25\frac{1}{2}$	$76\frac{1}{2}$
18	45	54	162	45	135	36	108	30	90	27	81
19	$47\frac{1}{2}$	57	171	$47\frac{1}{2}$	$142\frac{1}{2}$	38	114	$31\frac{2}{3}$	95	$28\frac{1}{2}$	$85\frac{1}{2}$
20	50	60	180	50	150	40	120	$33\frac{1}{3}$	100	30	90
21	$52\frac{1}{2}$	63	189	$52\frac{1}{2}$	$157\frac{1}{2}$	42	126	35	105	$31\frac{1}{2}$	$94\frac{1}{2}$
22	55	66	198	55	165	44	132	$36\frac{2}{3}$	110	33	99
23	$57\frac{1}{2}$	69	207	$57\frac{1}{2}$	$172\frac{1}{2}$	46	138	$38\frac{1}{3}$	115	$34\frac{1}{2}$	$103\frac{1}{2}$
24	60	72	216	60	180	48	144	40	120	36	108
25	$62\frac{1}{2}$	75	225	$62\frac{1}{2}$	$187\frac{1}{2}$	50	150	$41\frac{2}{3}$	125	$37\frac{1}{2}$	$112\frac{1}{2}$

* In estimating length of radiator allow $\frac{1}{2}$ inch for each plug or bushing.

Width of section $4\frac{1}{2}$ inches, width of legs $5\frac{1}{4}$ inches. Additional measurements on pages 202 and 203. Made in single connection only. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**VICTORIA****TWO-COLUMN
ORNAMENTAL****FOR
STEAM OR
WATER**

SAFFORD RADIATORS

VICTORIA TWO-COLUMN ORNAMENTAL RADIATORS
FOR STEAM OR WATER **CAPACITIES AND DIMENSIONS**

No. of Sections	* Length 2½ in. per Section	HEATING SURFACE													
		45" in Height		38" in Height		32" in Height		30" in Height		26" in Height		23" in Height		20" in Height	
		Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	5	10	30	8	24	6⅔	20	6	18	5⅓	16	4⅔	14	4	12
3	7½	15	45	12	36	10	30	9	27	8	24	7	21	6	18
4	10	20	60	16	48	13⅓	40	12	36	10⅔	32	9⅓	28	8	24
5	12½	25	75	20	60	16⅔	50	15	45	13⅓	40	11⅔	35	10	30
6	15	30	90	24	72	20	60	18	54	16	48	14	42	12	36
7	17½	35	105	28	84	23⅓	70	21	63	18⅔	56	16⅓	49	14	42
8	20	40	120	32	96	26⅔	80	24	72	21⅓	64	18⅔	56	16	48
9	22½	45	135	36	108	30	90	27	81	24	72	21	63	18	54
10	25	50	150	40	120	33⅓	100	30	90	26⅔	80	23⅓	70	20	60
11	27½	55	165	44	132	36⅔	110	33	99	29⅓	88	25⅔	77	22	66
12	30	60	180	48	144	40	120	36	108	32	96	28	84	24	72
13	32½	65	195	52	156	43⅓	130	39	117	34⅔	104	30⅓	91	26	78
14	35	70	210	56	168	46⅔	140	42	126	37⅓	112	32⅔	98	28	84
15	37½	75	225	60	180	50	150	45	135	40	120	35	105	30	90
16	40	80	240	64	192	53⅓	160	48	144	42⅔	128	37⅓	112	32	96
17	42½	85	255	68	204	56⅔	170	51	153	45⅓	136	39⅔	119	34	102
18	45	90	270	72	216	60	180	54	162	48	144	42	126	36	108
19	47½	95	285	76	228	63⅓	190	57	171	50⅔	152	44⅓	133	38	114
20	50	100	300	80	240	66⅔	200	60	180	53⅓	160	46⅔	140	40	120
21	52½	105	315	84	252	70	210	63	189	56	168	49	147	42	126
22	55	110	330	88	264	73⅓	220	66	198	58⅔	176	51⅓	154	44	132
23	57½	115	345	92	276	76⅔	230	69	207	61⅓	184	53⅔	161	46	138
24	60	120	360	96	288	80	240	72	216	64	192	56	168	48	144
25	62½	125	375	100	300	83⅓	250	75	225	66⅔	200	58⅓	175	50	150

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 7⅜ inches, width of legs 8¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

VICTORIA
THREE-COLUMN
ORNAMENTAL



FOR
STEAM OR
WATER

SAFFORD RADIATORS

VICTORIA THREE-COLUMN ORNAMENTAL RADIATORS
FOR STEAM OR WATER **CAPACITIES AND DIMENSIONS**

No. of Sections	* Length 2½ in. per Section	HEATING SURFACE											
		44" in Height		38" in Height		32" in Height		26" in Height		22" in Height		18" in Height	
		6 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	4½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3¾ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	2¼ Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	5	12	36	10	30	9	27	7½	22½	6	18	4½	13½
3	7½	18	54	15	45	13½	40½	11¼	33¾	9	27	6¾	20¼
4	10	24	72	20	60	18	54	15	45	12	36	9	27
5	12½	30	90	25	75	22½	67½	18¾	56¼	15	45	11¼	33¾
6	15	36	108	30	90	27	81	22½	67½	18	54	13½	40½
7	17½	42	126	35	105	31½	94½	26¼	78¾	21	63	15¾	47¼
8	20	48	144	40	120	36	108	30	90	24	72	18	54
9	22½	54	162	45	135	40½	121½	33¾	101¼	27	81	20¼	60¾
10	25	60	180	50	150	45	135	37½	112½	30	90	22½	67½
11	27½	66	198	55	165	49½	148½	41¼	123¾	33	99	24¾	74¼
12	30	72	216	60	180	54	162	45	135	36	108	27	81
13	32½	78	234	65	195	58½	175½	48¾	146¼	39	117	29¼	87¾
14	35	84	252	70	210	63	189	52½	157½	42	126	31½	94½
15	37½	90	270	75	225	67½	202½	56¼	168¾	45	135	33¾	101¼
16	40	96	288	80	240	72	216	60	180	48	144	36	108
17	42½	102	306	85	255	76½	229½	63¾	191¼	51	153	38¼	114¾
18	45	108	324	90	270	81	243	67½	202½	54	162	40½	121½
19	47½	114	342	95	285	85½	256½	71¼	213¾	57	171	42¾	128¼
20	50	120	360	100	300	90	270	75	225	60	180	45	135
21	52½	126	378	105	315	94½	283½	78¾	236¼	63	189	47¼	141¾
22	55	132	396	110	330	99	297	82½	247½	66	198	49½	148½
23	57½	138	414	115	345	103½	310½	86¼	258¾	69	207	51¾	155¼
24	60	144	432	120	360	108	324	90	270	72	216	54	162
25	62½	150	450	125	375	112½	337½	93¾	281¼	75	225	56¼	168¾

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 9 inches, width of legs 9¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

VICTORIA
FOUR-COLUMN
~~TWO-COLUMN~~
ORNAMENTAL



FOR
STEAM OR
WATER

SAFFORD RADIATORS
VICTORIA FOUR-COLUMN ORNAMENTAL RADIATORS
 FOR STEAM OR WATER
 CAPACITIES AND DIMENSIONS

No. of Sections	* Length 3 in. per Section	HEATING SURFACE													
		45" in Height		38" in Height		32" in Height		26" in Height		22" in Height		20" in Height		18" in Height	
		10 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	8 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	6½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	4 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	6	20	60	16	48	13	39	10	30	8	24	7	21	6	18
3	9	30	90	24	72	19½	58½	15	45	12	36	10½	31½	9	27
4	12	40	120	32	96	26	78	20	60	16	48	14	42	12	36
5	15	50	150	40	120	32½	97½	25	75	20	60	17½	52½	15	45
6	18	60	180	48	144	39	117	30	90	24	72	21	63	18	54
7	21	70	210	56	168	45½	136½	35	105	28	84	24½	73½	21	63
8	24	80	240	64	192	52	156	40	120	32	96	28	84	24	72
9	27	90	270	72	216	58½	175½	45	135	36	108	31½	94½	27	81
10	30	100	300	80	240	65	195	50	150	40	120	35	105	30	90
11	33	110	330	88	264	71½	214½	55	165	44	132	38½	115½	33	99
12	36	120	360	96	288	78	234	60	180	48	144	42	126	36	108
13	39	130	390	104	312	84½	253½	65	195	52	156	45½	136½	39	117
14	42	140	420	112	336	91	273	70	210	56	168	49	147	42	126
15	45	150	450	120	360	97½	292½	75	225	60	180	52½	157½	45	135
16	48	160	480	128	384	104	312	80	240	64	192	56	168	48	144
17	51	170	510	136	408	110½	331½	85	255	68	204	59½	178½	51	153
18	54	180	540	144	432	117	351	90	270	72	216	63	189	54	162
19	57	190	570	152	456	123½	370½	95	285	76	228	66½	199½	57	171
20	60	200	600	160	480	130	390	100	300	80	240	70	210	60	180
21	63	210	630	168	504	136½	409½	105	315	84	252	73½	220½	63	189
22	66	220	660	176	528	143	429	110	330	88	264	77	231	66	198
23	69	230	690	184	552	149½	448½	115	345	92	276	80½	241½	69	207
24	72	240	720	192	576	156	468	120	360	96	288	84	252	72	216
25	75	250	750	200	600	162½	487½	125	375	100	300	87½	262½	75	225

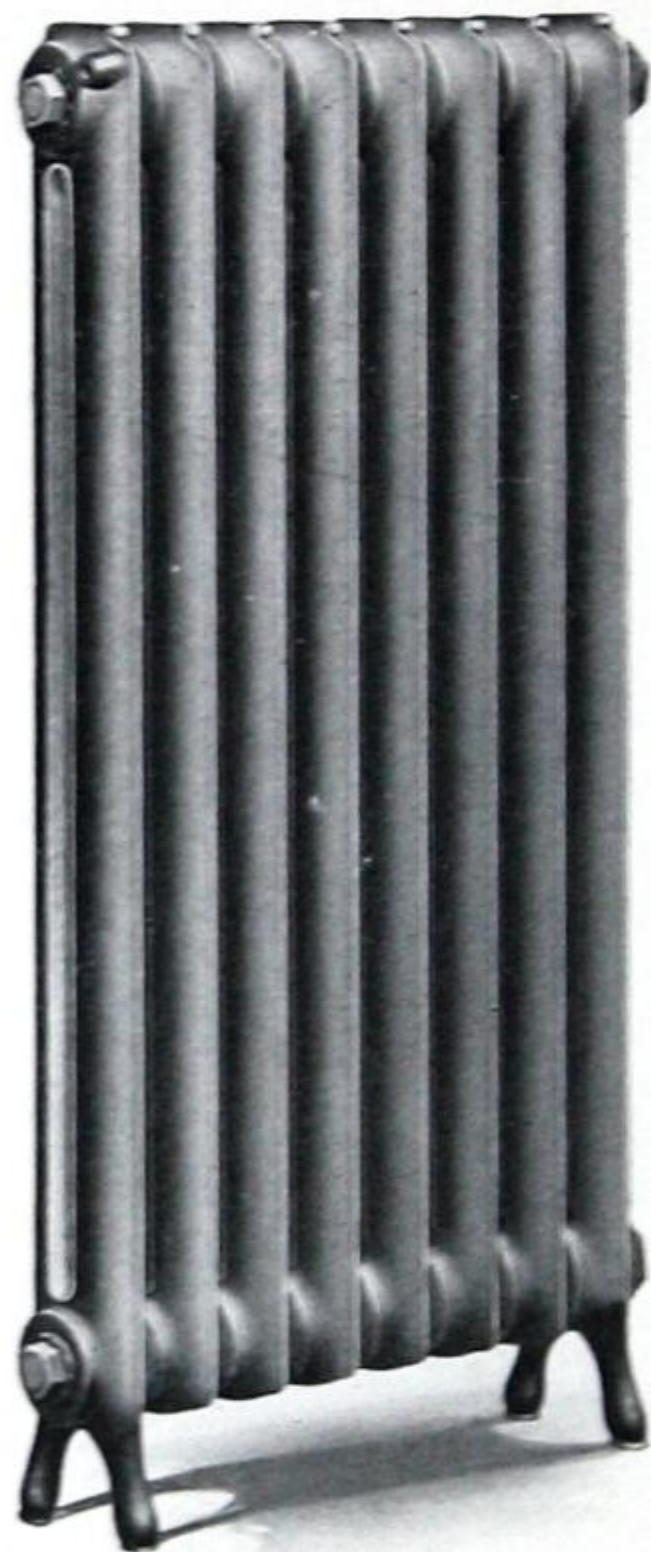
* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 3 inches, width of legs 11¾ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

REGINA
ONE-COLUMN
PLAIN



FOR
STEAM OR
WATER

SAFFORD RADIATORS**REGINA ONE-COLUMN PLAIN RADIATORS**

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length 2½" per Section	HEATING SURFACE									
		38" in Height		32" in Height		26" in Height		23" in Height		20" in Height	
		3 Sq. Ft. per Section	Equivalent 1-in. Pipe	2½ Sq. Ft. per Section	Equivalent 1-in. Pipe	2 Sq. Ft. per Section	Equivalent 1-in. Pipe	1⅔ Sq. Ft. per Section	Equivalent 1-in. Pipe	1½ Sq. Ft. per Section	Equivalent 1-in. Pipe
2	5	6	18	5	15	4	12	3⅓	10	3	9
3	7½	9	27	7½	22½	6	18	5	15	4½	13½
4	10	12	36	10	30	8	24	6⅔	20	6	18
5	12½	15	45	12½	37½	10	30	8⅓	25	7½	22½
6	15	18	54	15	45	12	36	10	30	9	27
7	17½	21	63	17½	52½	14	42	11⅔	35	10½	31½
8	20	24	72	20	60	16	48	13⅓	40	12	36
9	22½	27	81	22½	67½	18	54	15	45	13½	40½
10	25	30	90	25	75	20	60	16⅔	50	15	45
11	27½	33	99	27½	82½	22	66	18⅓	55	16½	49½
12	30	36	108	30	90	24	72	20	60	18	54
13	32½	39	117	32½	97½	26	78	21⅔	65	19½	58½
14	35	42	126	35	105	28	84	23⅓	70	21	63
15	37½	45	135	37½	112½	30	90	25	75	22½	67½
16	40	48	144	40	120	32	96	26⅔	80	24	72
17	42½	51	153	42½	127½	34	102	28⅓	85	25½	76½
18	45	54	162	45	135	36	108	30	90	27	81
19	47½	57	171	47½	142½	38	114	31⅔	95	28½	85½
20	50	60	180	50	150	40	120	33⅓	100	30	90
21	52½	63	189	52½	157½	42	126	35	105	31½	94½
22	55	66	198	55	165	44	132	36⅔	110	33	99
23	57½	69	207	57½	172½	46	138	38⅓	115	34½	103½
24	60	72	216	60	180	48	144	40	120	36	108
25	62½	75	225	62½	187½	50	150	41⅔	125	37½	112½

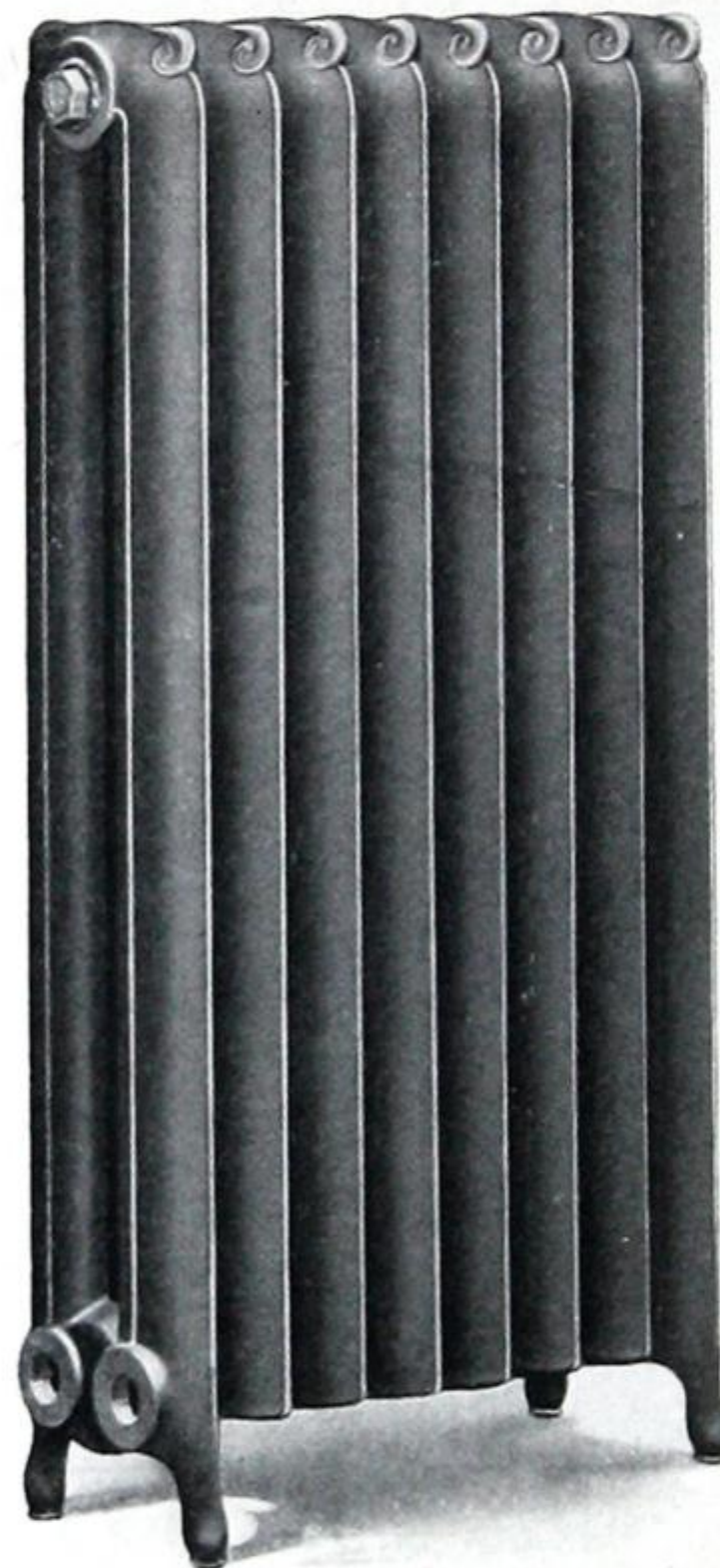
* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 4½ inches, width of legs 5¼ inches. Additional measurements on pages 202 and 203. Made in single connection only.

Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

REGINA
TWO-COLUMN
PLAIN



FOR
STEAM OR WATER

SAFFORD RADIATORS

REGINA TWO-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

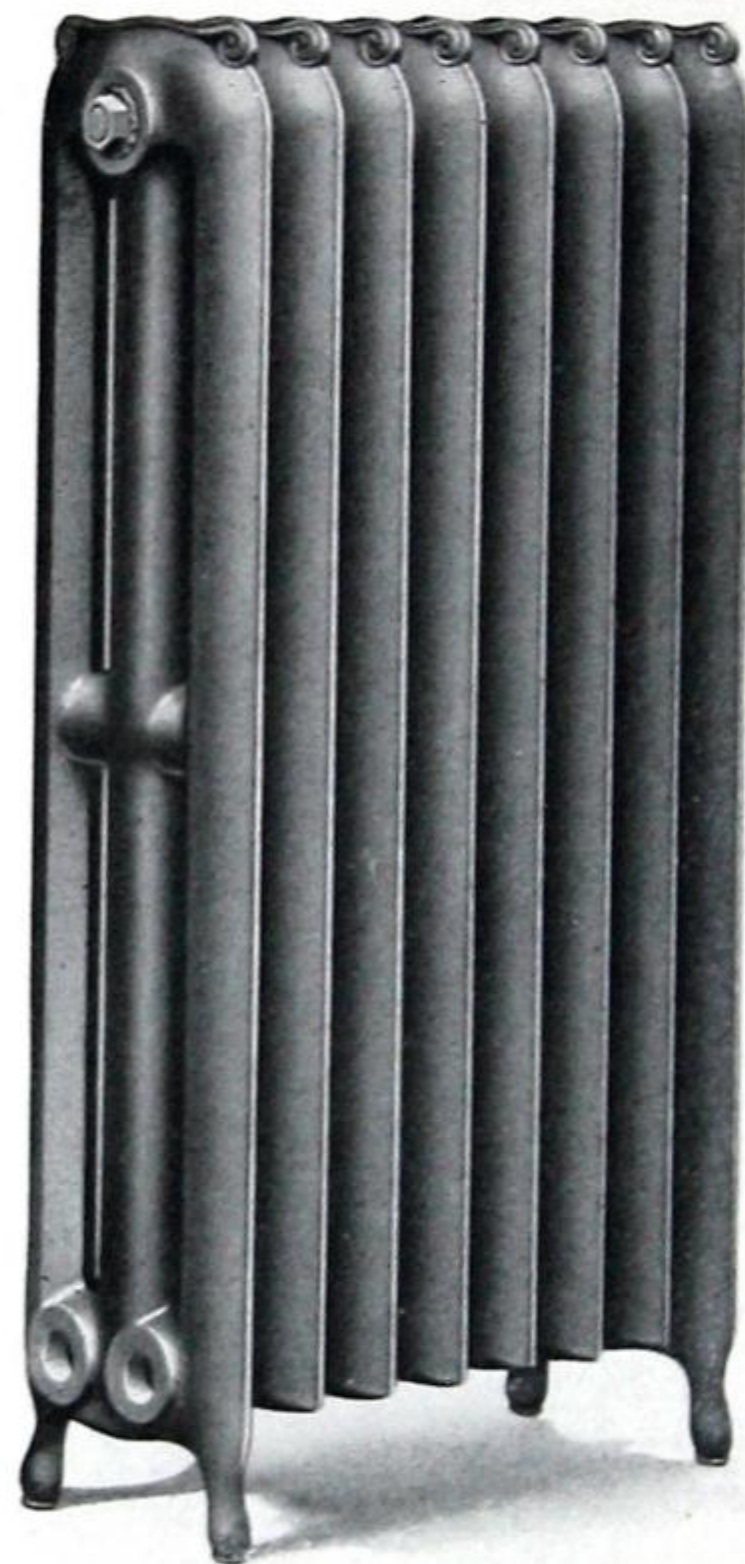
No. of Section	* Length 2½ in. per Section	HEATING SURFACE													
		45" in Height		38" in Height		32" in Height		30" in Height		26" in Height		23" in Height		20" in Height	
		Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	5	10	30	8	24	6⅔	20	6	18	5⅓	16	4⅔	14	4	12
3	7½	15	45	12	36	10	30	9	27	8	24	7	21	6	18
4	10	20	60	16	48	13⅓	40	12	36	10⅔	32	9⅓	28	8	24
5	12½	25	75	20	60	16⅔	50	15	45	13⅓	40	11⅔	35	10	30
6	15	30	90	24	72	20	60	18	54	16	48	14	42	12	36
7	17½	35	105	28	84	23⅓	70	21	63	18⅔	56	16⅓	49	14	42
8	20	40	120	32	96	26⅔	80	24	72	21⅓	64	18⅔	56	16	48
9	22½	45	135	36	108	30	90	27	81	24	72	21	63	18	54
10	25	50	150	40	120	33⅓	100	30	90	26⅔	80	23⅓	70	20	60
11	27½	55	165	44	132	36⅔	110	33	99	29⅓	88	25⅔	77	22	66
12	30	60	180	48	144	40	120	36	108	32	96	28	84	24	72
13	32½	65	195	52	156	43⅓	130	39	117	34⅔	104	30⅓	91	26	78
14	35	70	210	56	168	46⅔	140	42	126	37⅓	112	32⅔	98	28	84
15	37½	75	225	60	180	50	150	45	135	40	120	35	105	30	90
16	40	80	240	64	192	53⅓	160	48	144	42⅔	128	37⅓	112	32	96
17	42½	85	255	68	204	56⅔	170	51	153	45⅓	136	39⅔	119	34	102
18	45	90	270	72	216	60	180	54	162	48	144	42	126	36	108
19	47½	95	285	76	228	63⅓	190	57	171	50⅔	152	44⅓	133	38	114
20	50	100	300	80	240	66⅔	200	60	180	53⅓	160	46⅔	140	40	120
21	52½	105	315	84	252	70	210	63	189	56	168	49	147	42	126
22	55	110	330	88	264	73⅓	220	66	198	58⅔	176	51⅓	154	44	132
23	57½	115	345	92	276	76⅔	230	69	207	61⅓	184	53⅔	161	46	138
24	60	120	360	96	288	80	240	72	216	64	192	56	168	48	144
25	62½	125	375	100	300	83⅓	250	75	225	66⅔	200	58⅓	175	50	150

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 7⅜ inches, width of legs 8¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

REGINA
THREE-COLUMN
PLAIN



FOR
STEAM OR
WATER

SAFFORD RADIATORS

REGINA THREE-COLUMN PLAIN RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length 2½ in. per Section	HEATING SURFACE											
		44" in Height		38" in Height		32" in Height		26" in Height		22" in Height		18" in Height	
		6 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	4½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3¾ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	2¼ Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	5	12	36	10	30	9	27	7½	22½	6	18	4½	13½
3	7½	18	54	15	45	13½	40½	11¼	33¾	9	27	6¾	20¾
4	10	24	72	20	60	18	54	15	45	12	36	9	27
5	12½	30	90	25	75	22½	67½	18¾	56¾	15	45	11¼	33¾
6	15	36	108	30	90	27	81	22½	67½	18	54	13½	40½
7	17½	42	126	35	105	31½	94½	26¼	78¾	21	63	15¾	47¾
8	20	48	144	40	120	36	108	30	90	24	72	18	54
9	22½	54	162	45	135	40½	121½	33¾	101¼	27	81	20¾	60¾
10	25	60	180	50	150	45	135	37½	112½	30	90	22½	67½
11	27½	66	198	55	165	49½	148½	41¼	123¾	33	99	24¾	74¾
12	30	72	216	60	180	54	162	45	135	36	108	27	81
13	32½	78	234	65	195	58½	175½	48¾	146¼	39	117	29¾	87¾
14	35	84	252	70	210	63	189	52½	157½	42	126	31½	94½
15	37½	90	270	75	225	67½	202½	56¼	168¾	45	135	33¾	101¾
16	40	96	288	80	240	72	216	60	180	48	144	36	108
17	42½	102	306	85	255	76½	229½	63¾	191¼	51	153	38¾	114¾
18	45	108	324	90	270	81	243	67½	202½	54	162	40½	121½
19	47½	114	342	95	285	85½	256½	71¼	213¾	57	171	42¾	128¾
20	50	120	360	100	300	90	270	75	225	60	180	45	135
21	52½	126	378	105	315	94½	283½	78¾	236¼	63	189	47¾	141¾
22	55	132	396	110	330	99	297	82½	247½	66	198	49½	148½
23	57½	138	414	115	345	103½	310½	86¼	258¾	69	207	51¾	155¾
24	60	144	432	120	360	108	324	90	270	72	216	54	162
25	62½	150	450	125	375	112½	337½	93¾	281¼	75	225	56¾	168¾

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 9 inches, width of legs 9¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

REGINA
FOUR-COLUMN
PLAIN



FOR
STEAM OR
WATER

SAFFORD RADIATORS
REGINA FOUR-COLUMN PLAIN RADIATORS
FOR STEAM OR WATER **CAPACITIES AND DIMENSIONS**

No. of Sections	* Length 3 in. per Section	HEATING SURFACE													
		45" in Height		38" in Height		32" in Height		26" in Height		22" in Height		20" in Height		18" in Height	
		10 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	8 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	6½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	4 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	6	20	60	16	48	13	39	10	30	8	24	7	21	6	18
3	9	30	90	24	72	19½	58½	15	45	12	36	10½	31½	9	27
4	12	40	120	32	96	26	78	20	60	16	48	14	42	12	36
5	15	50	150	40	120	32½	97½	25	75	20	60	17½	52½	15	45
6	18	60	180	48	144	39	117	30	90	24	72	21	63	18	54
7	21	70	210	56	168	45½	136½	35	105	28	84	24½	73½	21	63
8	24	80	240	64	192	52	156	40	120	32	96	28	84	24	72
9	27	90	270	72	216	58½	175½	45	135	36	108	31½	94½	27	81
10	30	100	300	80	240	65	195	50	150	40	120	35	105	30	90
11	33	110	330	88	264	71½	214½	55	165	44	132	38½	115½	33	99
12	36	120	360	96	288	78	234	60	180	48	144	42	126	36	108
13	39	130	390	104	312	84½	253½	65	195	52	156	45½	136½	39	117
14	42	140	420	112	336	91	273	70	210	56	168	49	147	42	126
15	45	150	450	120	360	97½	292½	75	225	60	180	52½	157½	45	135
16	48	160	480	128	384	104	312	80	240	64	192	56	168	48	144
17	51	170	510	136	408	110½	331½	85	255	68	204	59½	178½	51	153
18	54	180	540	144	432	117	351	90	270	72	216	63	189	54	162
19	57	190	570	152	456	123½	370½	95	285	76	228	66½	199½	57	171
20	60	200	600	160	480	130	390	100	300	80	240	70	210	60	180
21	63	210	630	168	504	136½	409½	105	315	84	252	73½	220½	63	189
22	66	220	660	176	528	143	429	110	330	88	264	77	231	66	198
23	69	230	690	184	552	149½	448½	115	345	92	276	80½	241½	69	207
24	72	240	720	192	576	156	468	120	360	96	288	84	252	72	216
25	75	250	750	200	600	162½	487½	125	375	100	300	87½	262½	75	225

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 3 inches, width of legs 11¾ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

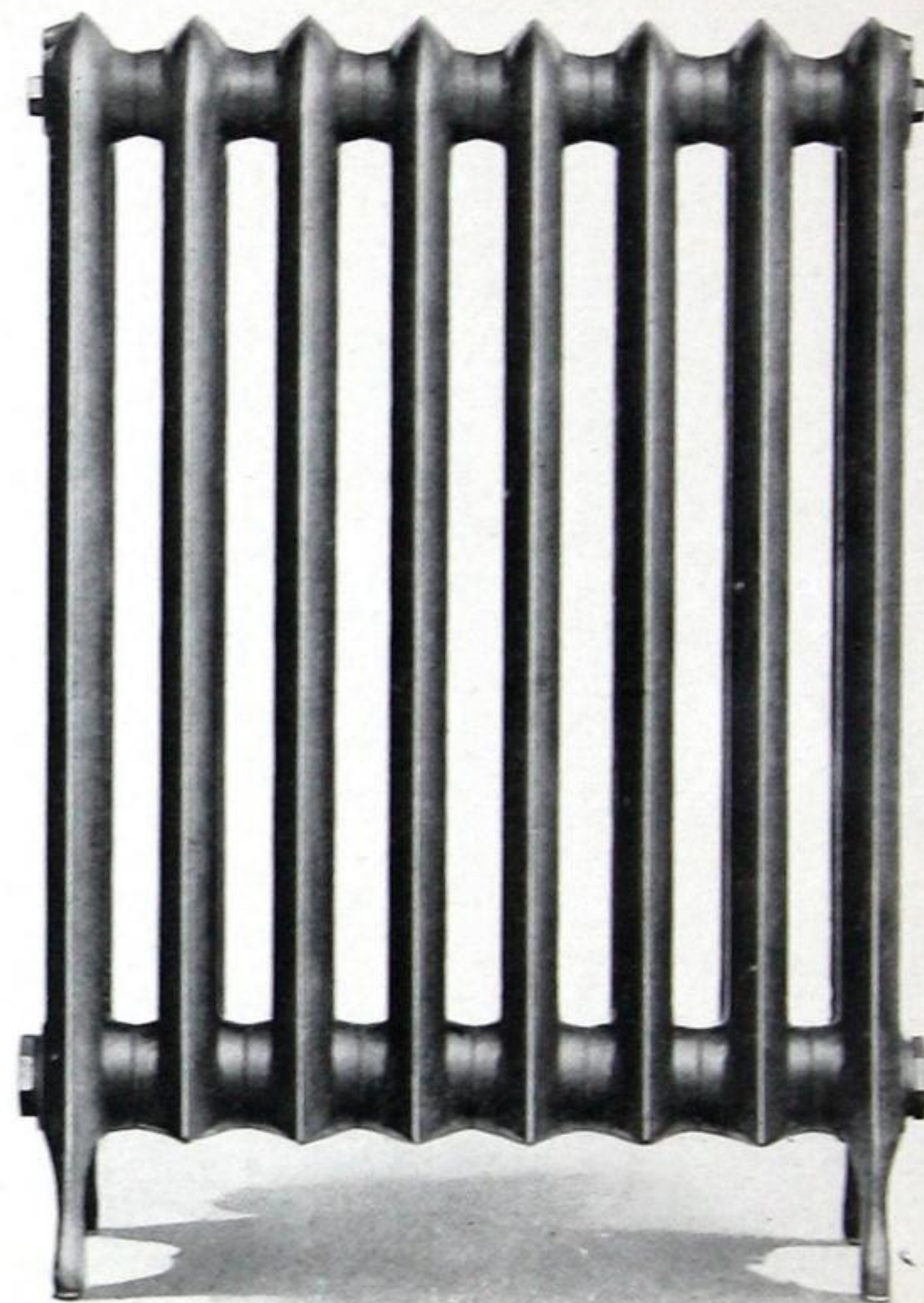
STEAM

SAXON**HOSPITAL
TWO-COLUMN
PLAIN**

Also made
in Regina Pattern

These Radiators are made with special wide hubs making the distance from centre to centre of loops $3\frac{1}{2}$ inches and allowing easy access to the sections for cleaning purposes. Where desired, Radiators can be furnished with extra wide hubs 5 inches centre to centre of loops.

Orders should specify style of radiator and hub required.



WATER

SAFFORD RADIATORS**SAXON AND REGINA TWO-COLUMN HOSPITAL RADIATORS****Plain—Round Top and Square Top—For Water or Steam****CAPACITIES AND DIMENSIONS****HEATING SURFACE**

No. of Sections	Length 3½ in. per Section	45" in Height		38" in Height		32" in Height		30" in Height		26" in Height		23" in Height		20" in Height	
		5 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	4 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	2½ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	2⅓ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	2 Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	7	10	30	8	24	6⅔	20	6	18	5⅓	16	4⅔	14	4	12
3	10½	15	45	12	36	10	30	9	27	8	24	7	21	6	18
4	14	20	60	16	48	13⅓	40	12	36	10⅔	32	9⅓	28	8	24
5	17½	25	75	20	60	16⅔	50	15	45	13⅓	40	11⅔	35	10	30
6	21	30	90	24	72	20	60	18	54	16	48	14	42	12	36
7	24½	35	105	28	84	23⅓	70	21	63	18⅔	56	16⅓	49	14	42
8	28	40	120	32	96	26⅔	80	24	72	21⅓	64	18⅔	56	16	48
9	31½	45	135	36	108	30	90	27	81	24	72	21	63	18	54
10	35	50	150	40	120	33⅓	100	30	90	26⅔	80	23⅓	70	20	60
11	38½	55	165	44	132	36⅔	110	33	99	29⅓	88	25⅔	77	22	66
12	42	60	180	48	144	40	120	36	108	32	96	28	84	24	72
13	45½	65	195	52	156	43⅓	130	39	117	34⅔	104	30⅓	91	26	78
14	49	70	210	56	168	46⅔	140	42	126	37⅓	112	32⅔	98	28	84
15	52½	75	225	60	180	50	150	45	135	40	120	35	105	30	90
16	56	80	240	64	192	53⅓	160	48	144	42⅔	128	37⅓	112	32	96
17	59½	85	255	68	204	56⅔	170	51	153	45⅓	136	39⅔	119	34	102
18	63	90	270	72	216	60	180	54	162	48	144	42	126	36	108
19	66½	95	285	76	228	63⅓	190	57	171	50⅔	152	44⅓	133	38	114
20	70	100	300	80	240	66⅔	200	60	180	53⅓	160	46⅔	140	40	120
21	73½	105	315	84	252	70	210	63	189	56	168	49	147	42	126
22	77	110	330	88	264	73⅓	220	66	198	58⅔	176	51⅓	154	44	132
23	80½	115	345	92	276	76⅔	230	69	207	61⅓	184	53⅔	161	46	138
24	84	120	360	96	288	80	240	72	216	64	192	56	168	48	144
25	87½	125	375	100	300	83⅓	250	75	225	66⅔	200	58⅓	175	50	150

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 7⅝ inches, width of legs 8¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections

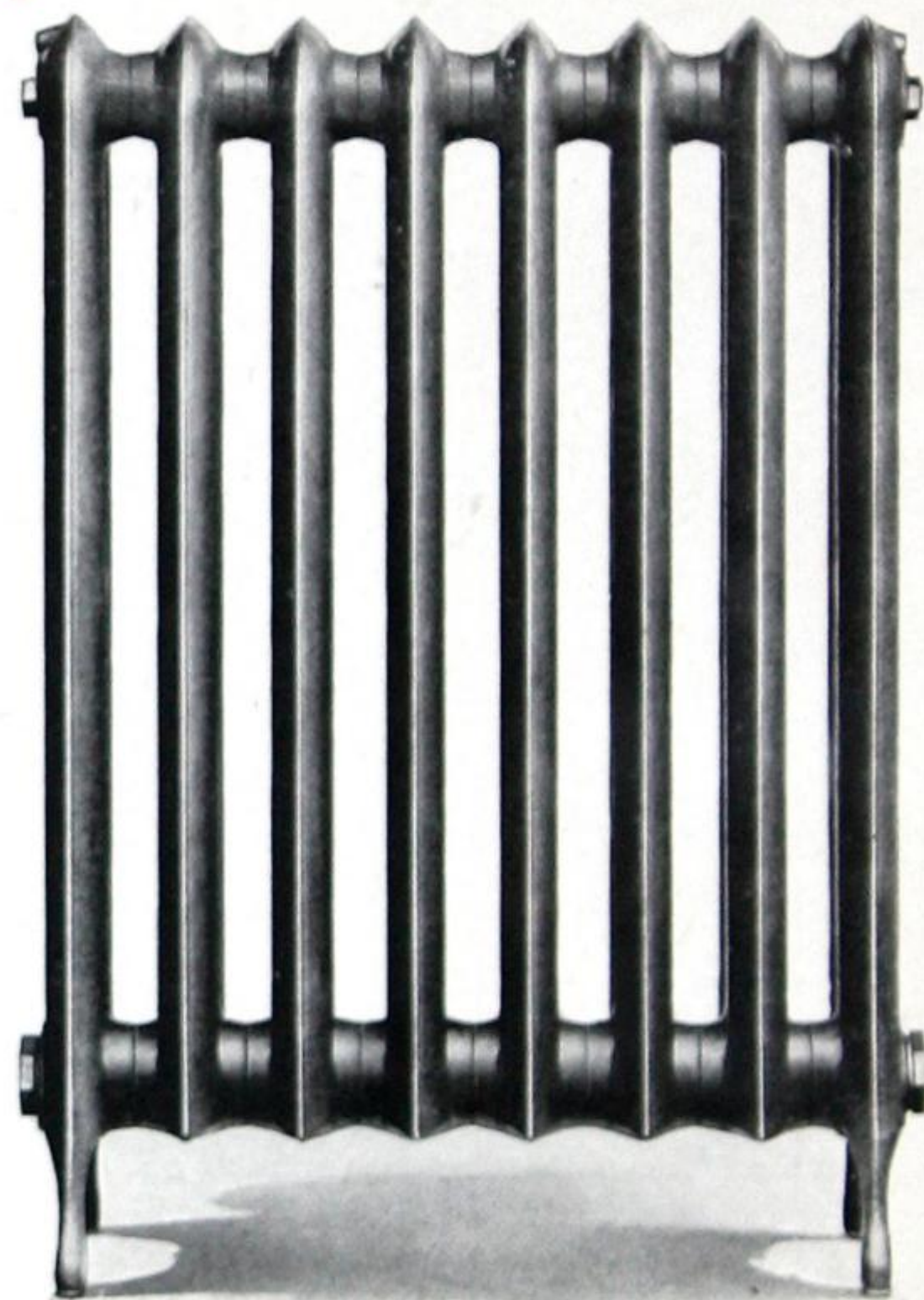
Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**STEAM****SAXON****HOSPITAL
THREE-COLUMN
PLAIN**

Also made in Regina
Pattern

These Radiators are made with special wide hubs making the distance from centre to centre of loops $3\frac{1}{2}$ inches and allowing easy access to the sections for cleaning purposes. Where desired, Radiators can be furnished with extra wide hubs 5 inches centre to centre of loops.

Orders should specify style of radiator and hub required.

**WATER**

SAFFORD RADIATORS
SAXON AND REGINA THREE-COLUMN HOSPITAL RADIATORS
 Plain—Round and Square Top—For Water or Steam
 CAPACITIES AND DIMENSIONS

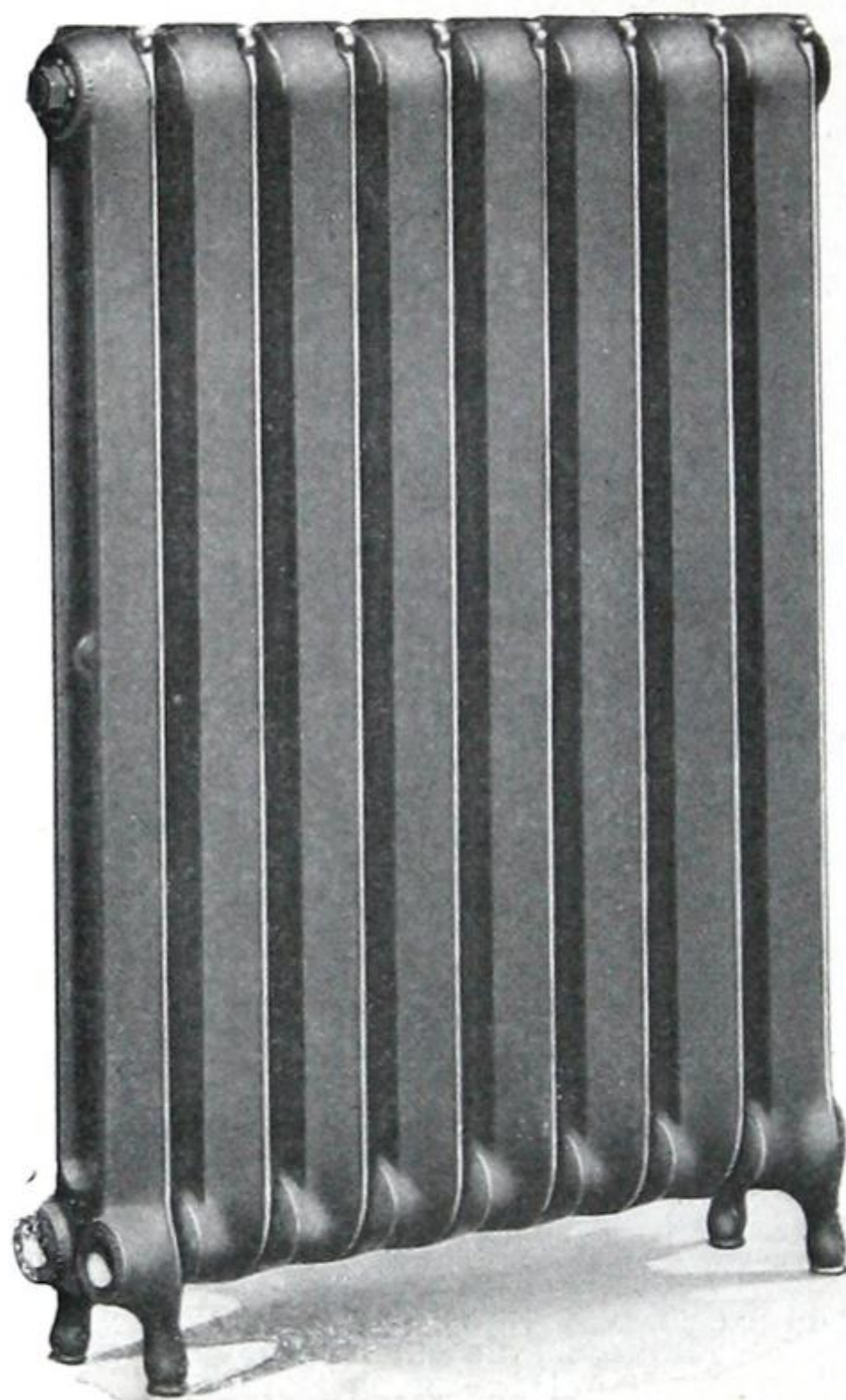
HEATING SURFACE

No. of Sections	* Length 3½ in. per Section	44" in Height		38" in Height		32" in Height		26" in Height		22" in Height		18" in Height	
		Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe	Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	7	12	36	10	30	9	27	7½	22½	6	18	4½	13½
3	10½	18	54	15	45	13½	40½	11¼	33¾	9	27	6¾	20¼
4	14	24	72	20	60	18	54	15	45	12	36	9	27
5	17½	30	90	25	75	22½	67½	18¾	56¼	15	45	11¼	33¾
6	21	36	108	30	90	27	81	22½	67½	18	54	13½	40½
7	24½	42	126	35	105	31½	94½	26¼	78¾	21	63	15¾	47¼
8	28	48	144	40	120	36	108	30	90	24	72	18	54
9	31½	54	162	45	135	40½	121½	33¾	101¼	27	81	20¼	60¾
10	35	60	180	50	150	45	135	37½	112½	30	90	22½	67½
11	38½	66	198	55	165	49½	148½	41¼	123¾	33	99	24¾	74¼
12	42	72	216	60	180	54	162	45	135	36	108	27	81
13	45½	78	234	65	195	58½	175½	48¾	146¼	39	117	29¼	87¾
14	49	84	252	70	210	63	189	52½	157½	42	126	31½	94½
15	52½	90	270	75	225	67½	202½	56¼	168¾	45	135	33¾	101¼
16	56	96	288	80	240	72	216	60	180	48	144	36	108
17	59½	102	306	85	255	76½	229½	63¾	191¼	51	153	38¼	114¾
18	63	108	324	90	270	81	243	67½	202½	54	162	40½	121½
19	66½	114	342	95	285	85½	256½	71¼	213¾	57	171	42¾	128¼
20	70	120	360	100	300	90	270	75	225	60	180	45	135
21	73½	126	378	105	315	94½	283½	78¾	236¼	63	189	47¼	141¾
22	77	132	396	110	330	99	297	82½	247½	66	198	49½	148½
23	80½	138	414	115	345	103½	310½	86¼	258¾	69	207	51¾	155¼
24	84	144	432	120	360	108	324	90	270	72	216	54	162
25	87½	150	450	125	375	112½	337½	93¾	281¼	75	225	56¼	168¾

* In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 9 inches, width of legs 9¼ inches. Additional measurements on pages 202 and 203. Made in twin and single connections.

Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**DAISY****TWO-COLUMN
PLAIN OR ORNAMENTAL****FOR
WATER OR
STEAM**

SAFFORD RADIATORS

DAISY TWO-COLUMN PLAIN OR ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length 3½" per Section	HEATING SURFACE									
		38" in Height		32" in Height		26" in Height		20" in Height		16" in Height	
		4 Sq. Ft. per Section	Equivalent 1-in. Pipe	3⅓ Sq. Ft. per Section	Equivalent 1-in. Pipe	2⅔ Sq. Ft. per Section	Equivalent 1-in. Pipe	2 Sq. Ft. per Section	Equivalent 1-in. Pipe	1½ Sq. Ft. per Section	Equivalent 1-in. Pipe
2	7	8	24	6⅔	20	5⅓	16	4	12	3	9
3	10½	12	36	10	30	8	24	6	18	4½	13½
4	14	16	48	13⅓	40	10⅔	32	8	24	6	18
5	17½	20	60	16⅔	50	13⅓	40	10	30	7½	22½
6	21	24	72	20	60	16	48	12	36	9	27
7	24½	28	84	23⅓	70	18⅔	56	14	42	10½	31½
8	28	32	96	26⅔	80	21⅓	64	16	48	12	36
9	31½	36	108	30	90	24	72	18	54	13½	40½
10	35	40	120	33⅓	100	26⅔	80	20	60	15	45
11	38½	44	132	36⅔	110	29⅓	88	22	66	16½	49½
12	42	48	144	40	120	32	96	24	72	18	54
13	45½	52	156	43⅓	130	34⅔	104	26	78	19½	58½
14	49	56	168	46⅔	140	37⅓	112	28	84	21	63
15	52½	60	180	50	150	40	120	30	90	22½	67½
16	56	64	192	53⅓	160	42⅔	128	32	96	24	72
17	59½	68	204	56⅔	170	45⅓	136	34	102	25½	76½
18	63	72	216	60	180	48	144	36	108	27	81
19	66½	76	228	63⅓	190	50⅔	152	38	114	28½	85½
20	70	80	240	66⅔	200	53⅓	160	40	120	30	90
21	73½	84	252	70	210	56	168	42	126	31½	94½
22	77	88	264	73⅓	220	58⅔	176	44	132	33	99
23	80½	92	276	76⅔	230	61⅓	184	46	138	34½	103½
24	84	96	288	80	240	64	192	48	144	36	108
25	87½	100	300	83⅓	250	66⅔	200	50	150	37½	112½

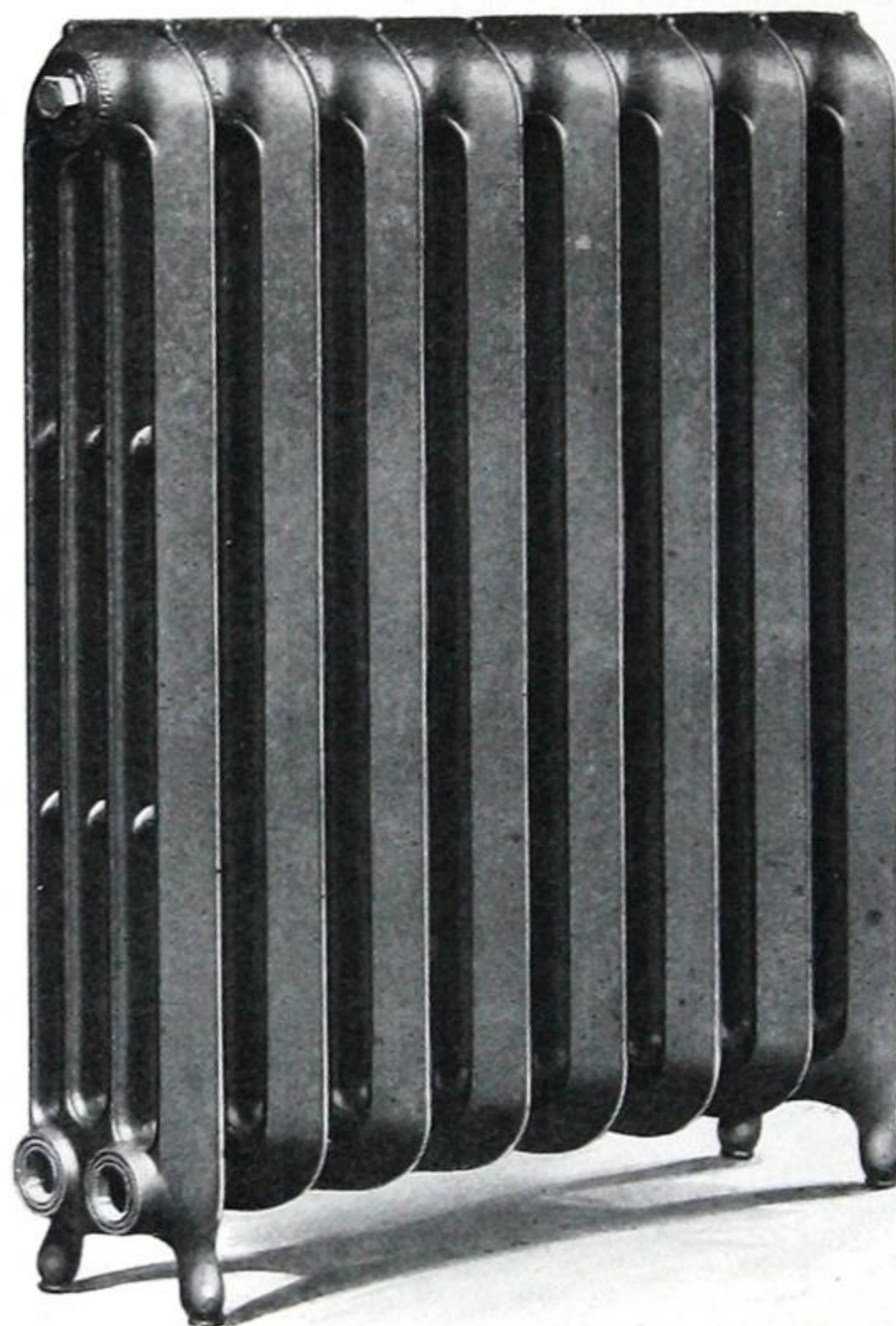
*In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 5 inches, width of legs 6½ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

DAISY
FOUR-COLUMN
PLAIN OR ORNAMENTAL



FOR
STEAM OR
WATER

SAFFORD RADIATORS**DAISY FOUR-COLUMN PLAIN OR ORNAMENTAL RADIATORS**

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length $4\frac{1}{8}$ in. per Section	HEATING SURFACE											
		42" in Height		38" in Height		32" in Height		26" in Height		20" in Height		16" in Height	
		$9\frac{2}{3}$ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	8 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	$6\frac{2}{3}$ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	$5\frac{1}{3}$ Sq. Ft. per Section	Equiva- lent 1 in. Pipe	4 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	$2\frac{1}{2}$ Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	$8\frac{1}{4}$	$19\frac{1}{3}$	58	16	48	$13\frac{1}{3}$	40	$10\frac{2}{3}$	32	8	24	5	15
3	$12\frac{3}{8}$	29	87	24	72	20	60	16	48	12	36	$7\frac{1}{2}$	$22\frac{1}{2}$
4	$16\frac{1}{2}$	$38\frac{2}{3}$	116	32	96	$26\frac{2}{3}$	80	$21\frac{1}{3}$	64	16	48	10	30
5	$20\frac{5}{8}$	$48\frac{1}{3}$	145	40	120	$33\frac{1}{3}$	100	$26\frac{2}{3}$	80	20	60	$12\frac{1}{2}$	$37\frac{1}{2}$
6	$24\frac{3}{4}$	58	174	48	144	40	120	32	96	24	72	15	45
7	$28\frac{7}{8}$	$67\frac{2}{3}$	203	56	168	$46\frac{2}{3}$	140	$37\frac{1}{3}$	112	28	84	$17\frac{1}{2}$	$52\frac{1}{2}$
8	33	$77\frac{1}{3}$	232	64	192	$53\frac{1}{3}$	160	$42\frac{2}{3}$	128	32	96	20	60
9	$37\frac{1}{8}$	87	261	72	216	60	180	48	144	36	108	$22\frac{1}{2}$	$67\frac{1}{2}$
10	$41\frac{1}{4}$	$96\frac{2}{3}$	290	80	240	$66\frac{2}{3}$	200	$53\frac{1}{3}$	160	40	120	25	75
11	$45\frac{3}{8}$	$106\frac{1}{3}$	319	88	264	$73\frac{1}{3}$	220	$58\frac{2}{3}$	176	44	132	$27\frac{1}{2}$	$82\frac{1}{2}$
12	$49\frac{1}{2}$	116	348	96	288	80	240	64	192	48	144	30	90
13	$53\frac{5}{8}$	$125\frac{2}{3}$	377	104	312	$86\frac{2}{3}$	260	$69\frac{1}{3}$	208	52	156	$32\frac{1}{2}$	$97\frac{1}{2}$
14	$57\frac{3}{4}$	$135\frac{1}{3}$	406	112	336	$93\frac{1}{3}$	280	$74\frac{2}{3}$	224	56	168	35	105
15	$61\frac{7}{8}$	145	435	120	360	100	300	80	240	60	180	$37\frac{1}{2}$	$112\frac{1}{2}$
16	66	$154\frac{2}{3}$	464	128	384	$106\frac{2}{3}$	320	$85\frac{1}{3}$	256	64	192	40	120
17	$70\frac{1}{8}$	$164\frac{1}{3}$	493	136	408	$113\frac{1}{3}$	340	$90\frac{2}{3}$	272	68	204	$42\frac{1}{2}$	$127\frac{1}{2}$
18	$74\frac{1}{4}$	174	522	144	432	120	360	96	288	72	216	45	135
19	$78\frac{3}{8}$	$183\frac{2}{3}$	551	152	456	$126\frac{2}{3}$	380	$101\frac{1}{3}$	304	76	228	$47\frac{1}{2}$	$142\frac{1}{2}$
20	$82\frac{1}{2}$	$193\frac{1}{3}$	580	160	480	$133\frac{1}{3}$	400	$106\frac{2}{3}$	320	80	240	50	150
21	$86\frac{5}{8}$	203	609	168	504	140	420	112	336	84	252	$52\frac{1}{2}$	$157\frac{1}{2}$
22	$90\frac{3}{4}$	$212\frac{2}{3}$	638	176	528	$146\frac{2}{3}$	440	$117\frac{1}{3}$	352	88	264	55	165
23	$94\frac{7}{8}$	$222\frac{1}{3}$	667	184	552	$153\frac{1}{3}$	460	$122\frac{2}{3}$	368	92	276	$57\frac{1}{2}$	$172\frac{1}{2}$
24	99	232	696	192	576	160	480	128	384	96	288	60	180
25	$103\frac{1}{8}$	$241\frac{2}{3}$	725	200	600	$166\frac{2}{3}$	500	$133\frac{1}{3}$	400	100	300	$62\frac{1}{2}$	$187\frac{1}{2}$

* In estimating length of radiator allow $\frac{1}{2}$ inch for each plug or bushing.Width of section $8\frac{1}{4}$ inches, width of leg $8\frac{1}{2}$ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

FAVORITE
TWO-COLUMN
PLAIN OR ORNAMENTAL



FOR
STEAM OR
WATER

SAFFORD RADIATORS**FAVORITE TWO-COLUMN PLAIN OR ORNAMENTAL RADIATORS****FOR STEAM OR WATER****CAPACITIES AND DIMENSIONS**

No. of Sections	* Length 3½" per Section	HEATING SURFACE									
		38" in Height		32" in Height		26" in Height		20" in Height		16" in Height	
		4 Sq. Ft. per Section	Equivalent 1-in. Pipe	3½ Sq. Ft. per Section	Equivalent 1-in. Pipe	2⅔ Sq. Ft. per Section	Equivalent 1-in. Pipe	2 Sq. Ft. per Section	Equivalent 1-in. Pipe	1½ Sq. Ft. per Section	Equivalent 1-in. Pipe
2	7	8	24	6⅔	20	5⅓	16	4	12	3	9
3	10½	12	36	10	30	8	24	6	18	4½	13½
4	14	16	48	13⅓	40	10⅔	32	8	24	6	18
5	17½	20	60	16⅔	50	13⅓	40	10	30	7½	22½
6	21	24	72	20	60	16	48	12	36	9	27
7	24½	28	84	23⅓	70	18⅔	56	14	42	10½	31½
8	28	32	96	26⅔	80	21⅓	64	16	48	12	36
9	31½	36	108	30	90	24	72	18	54	13½	40½
10	35	40	120	33⅓	100	26⅔	80	20	60	15	45
11	38½	44	132	36⅔	110	29⅓	88	22	66	16½	49½
12	42	48	144	40	120	32	96	24	72	18	54
13	45½	52	156	43⅓	130	34⅔	104	26	78	19½	58½
14	49	56	168	46⅔	140	37⅓	112	28	84	21	63
15	52½	60	180	50	150	40	120	30	90	22½	67½
16	56	64	192	53⅓	160	42⅔	128	32	96	24	72
17	59½	68	204	56⅔	170	45⅓	136	34	102	25½	76½
18	63	72	216	60	180	48	144	36	108	27	81
19	66½	76	228	63⅓	190	50⅔	152	38	114	28½	85½
20	70	80	240	66⅔	200	53⅓	160	40	120	30	90
21	73½	84	252	70	210	56	168	42	126	31½	94½
22	77	88	264	73⅓	220	58⅔	176	44	132	33	99
23	80½	92	276	76⅔	230	61⅓	184	46	138	34½	103½
24	84	96	288	80	240	64	192	48	144	36	108
25	87½	100	300	83⅓	250	66⅔	200	50	150	37½	112½

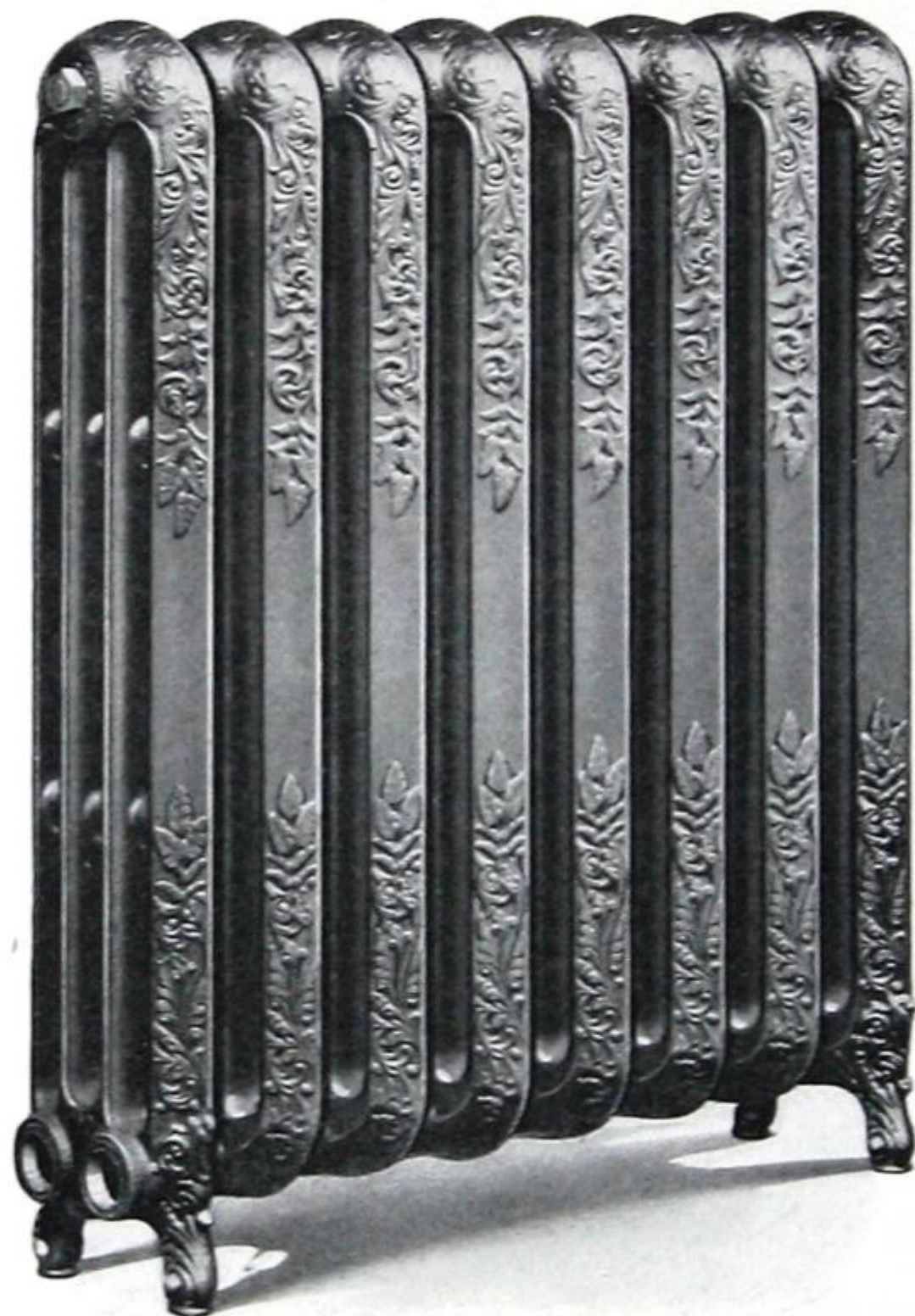
*In estimating length of radiator allow ½ inch for each plug or bushing.

Width of section 5 inches, width of legs 6½ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS

FAVORITE
FOUR-COLUMN
PLAIN OR ORNAMENTAL



FOR
STEAM OR
WATER

SAFFORD RADIATORS

FAVORITE FOUR-COLUMN PLAIN OR ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length 4 1/8 in. per Section	HEATING SURFACE											
		42" in Height		38" in Height		32" in Height		26" in Height		20" in Height		16" in Height	
		9 2/3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	8 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	6 2/3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	5 1/3 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	4 Sq. Ft. per Section	Equiva- lent 1 in. Pipe	2 1/2 Sq. Ft. per Section	Equiva- lent 1 in. Pipe
2	8 1/4	19 1/3	58	16	48	13 1/3	40	10 2/3	32	8	24	5	15
3	12 3/8	29	87	24	72	20	60	16	48	12	36	7 1/2	22 1/2
4	16 1/2	38 2/3	116	32	96	26 2/3	80	21 1/3	64	16	48	10	30
5	20 5/8	48 1/3	145	40	120	33 1/3	100	26 2/3	80	20	60	12 1/2	37 1/2
6	24 3/4	58	174	48	144	40	120	32	96	24	72	15	45
7	28 7/8	67 2/3	203	56	168	46 2/3	140	37 1/3	112	28	84	17 1/2	52 1/2
8	33	77 1/3	232	64	192	53 1/3	160	42 2/3	128	32	96	20	60
9	37 1/8	87	261	72	216	60	180	48	144	36	108	22 1/2	67 1/2
10	41 1/4	96 2/3	290	80	240	66 2/3	200	53 1/3	160	40	120	25	75
11	45 3/8	106 1/3	319	88	264	73 1/3	220	58 2/3	176	44	132	27 1/2	82 1/2
12	49 1/2	116	348	96	288	80	240	64	192	48	144	30	90
13	53 5/8	125 2/3	377	104	312	86 2/3	260	69 1/3	208	52	156	32 1/2	97 1/2
14	57 3/4	135 1/3	406	112	336	93 1/3	280	74 2/3	224	56	168	35	105
15	61 7/8	145	435	120	360	100	300	80	240	60	180	37 1/2	112 1/2
16	66	154 2/3	464	128	384	106 2/3	320	85 1/3	256	64	192	40	120
17	70 1/8	164 1/3	493	136	408	113 1/3	340	90 2/3	272	68	204	42 1/2	127 1/2
18	74 1/4	174	522	144	432	120	360	96	288	72	216	45	135
19	78 3/8	183 2/3	551	152	456	126 2/3	380	101 1/3	304	76	228	47 1/2	142 1/2
20	82 1/2	193 1/3	580	160	480	133 1/3	400	106 2/3	320	80	240	50	150
21	86 5/8	203	609	168	504	140	420	112	336	84	252	52 1/2	157 1/2
22	90 3/4	212 2/3	638	176	528	146 2/3	440	117 1/3	352	88	264	55	165
23	94 7/8	222 1/3	667	184	552	153 1/3	460	122 2/3	368	92	276	57 1/2	172 1/2
24	99	232	696	192	576	160	480	128	384	96	288	60	180
25	103 1/8	241 2/3	725	200	600	166 2/3	500	133 1/3	400	100	300	62 1/2	187 1/2

* In estimating length of radiator allow 1/2 inch for each plug or bushing.

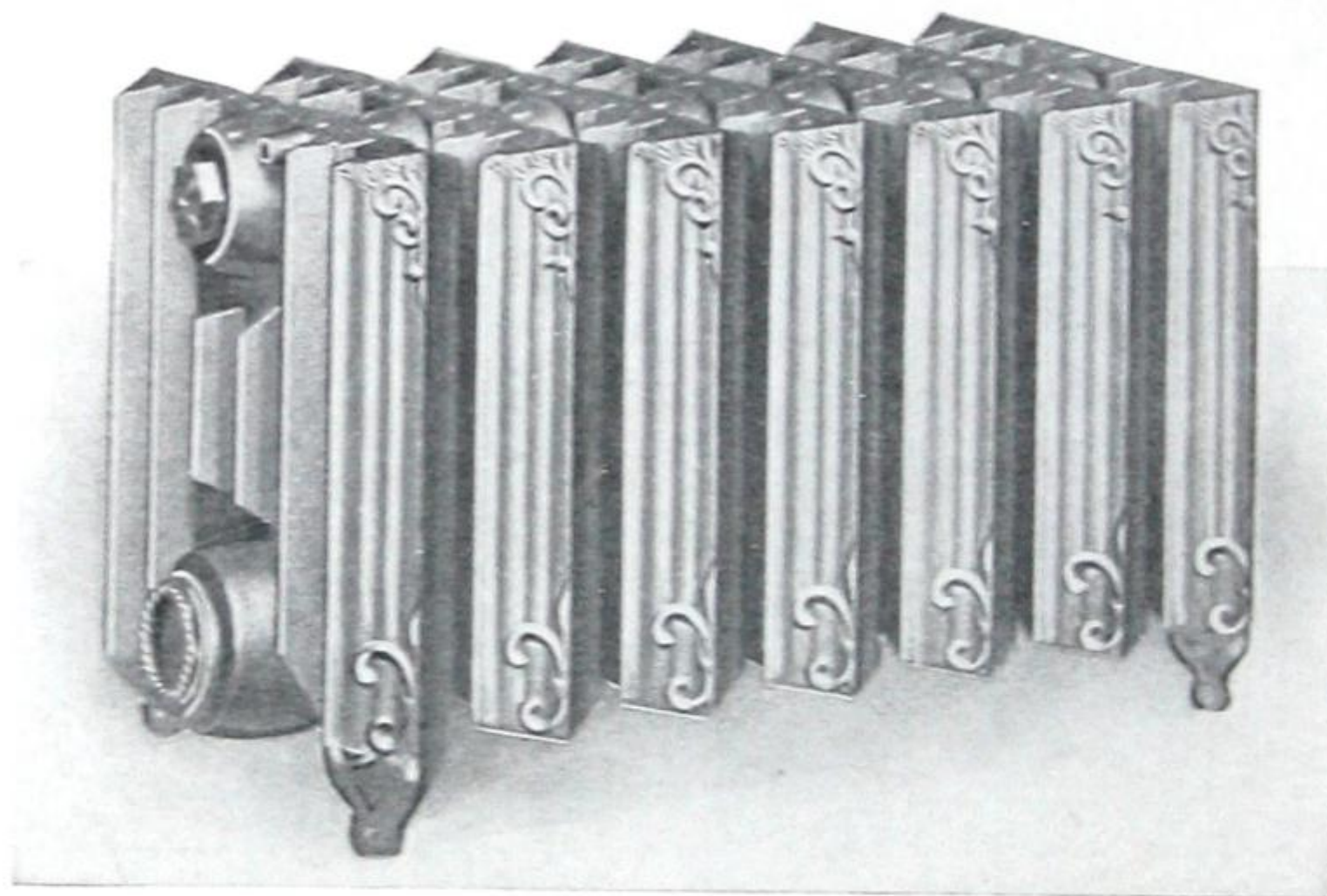
Width of section 8 1/4 inches, width of leg 8 1/2 inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**ACME**

FLUE WINDOW—ORNAMENTAL
FIVE-COLUMN

FOR STEAM OR WATER



SAFFORD RADIATORS

ACME FIVE-COLUMN FLUE WINDOW ORNAMENTAL RADIATORS

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length 3" per Section	HEATING SURFACE									
		20" in Height		18" in Height		16" in Height		14" in Height		13" in Height	
		6 Sq. Ft. per Section	Equivalent 1-in. Pipe	5 $\frac{1}{3}$ Sq. Ft. per Section	Equivalent 1-in. Pipe	4 $\frac{2}{3}$ Sq. Ft. per Section	Equivalent 1-in. Pipe	4 Sq. Ft. per Section	Equivalent 1-in. Pipe	3 $\frac{2}{3}$ Sq. Ft. per Section	Equivalent 1-in. Pipe
2	6	12	36	10 $\frac{2}{3}$	32	9 $\frac{1}{3}$	28	8	24	7 $\frac{1}{3}$	22
3	9	18	54	16	48	14	42	12	36	11	33
4	12	24	72	21 $\frac{1}{3}$	64	18 $\frac{2}{3}$	56	16	48	14 $\frac{2}{3}$	44
5	15	30	90	26 $\frac{2}{3}$	80	23 $\frac{1}{3}$	70	20	60	18 $\frac{1}{3}$	55
6	18	36	108	32	96	28	84	24	72	22	66
7	21	42	126	37 $\frac{1}{3}$	112	32 $\frac{2}{3}$	98	28	84	25 $\frac{2}{3}$	77
8	24	48	144	42 $\frac{2}{3}$	128	37 $\frac{1}{3}$	112	32	96	29 $\frac{1}{3}$	88
9	27	54	162	48	144	42	126	36	108	33	99
10	30	60	180	53 $\frac{1}{3}$	160	46 $\frac{2}{3}$	140	40	120	36 $\frac{2}{3}$	110
11	33	66	198	58 $\frac{2}{3}$	176	51 $\frac{1}{3}$	154	44	132	40 $\frac{1}{3}$	121
12	36	72	216	64	192	56	168	48	144	44	132
13	39	78	234	69 $\frac{1}{3}$	208	60 $\frac{2}{3}$	182	52	156	47 $\frac{2}{3}$	143
14	42	84	252	74 $\frac{2}{3}$	224	65 $\frac{1}{3}$	196	56	168	51 $\frac{1}{3}$	154
15	45	90	270	80	240	70	210	60	180	55	165
16	48	96	288	85 $\frac{1}{3}$	256	74 $\frac{2}{3}$	224	64	192	58 $\frac{2}{3}$	176
17	51	102	306	90 $\frac{2}{3}$	272	79 $\frac{1}{3}$	238	68	204	62 $\frac{1}{3}$	187
18	54	108	324	96	288	84	252	72	216	66	198
19	57	114	342	101 $\frac{1}{3}$	304	88 $\frac{2}{3}$	266	76	228	69 $\frac{2}{3}$	209
20	60	120	360	106 $\frac{2}{3}$	320	93 $\frac{1}{3}$	280	80	240	73 $\frac{1}{3}$	220
21	63	126	378	112	336	98	294	84	252	77	231
22	66	132	396	117 $\frac{1}{3}$	352	102 $\frac{2}{3}$	308	88	264	80 $\frac{2}{3}$	242
23	69	138	414	122 $\frac{2}{3}$	368	107 $\frac{1}{3}$	322	92	276	84 $\frac{1}{3}$	253
24	72	144	432	128	384	112	336	96	288	88	264
25	75	150	450	133 $\frac{1}{3}$	400	116 $\frac{2}{3}$	350	100	300	91 $\frac{2}{3}$	275

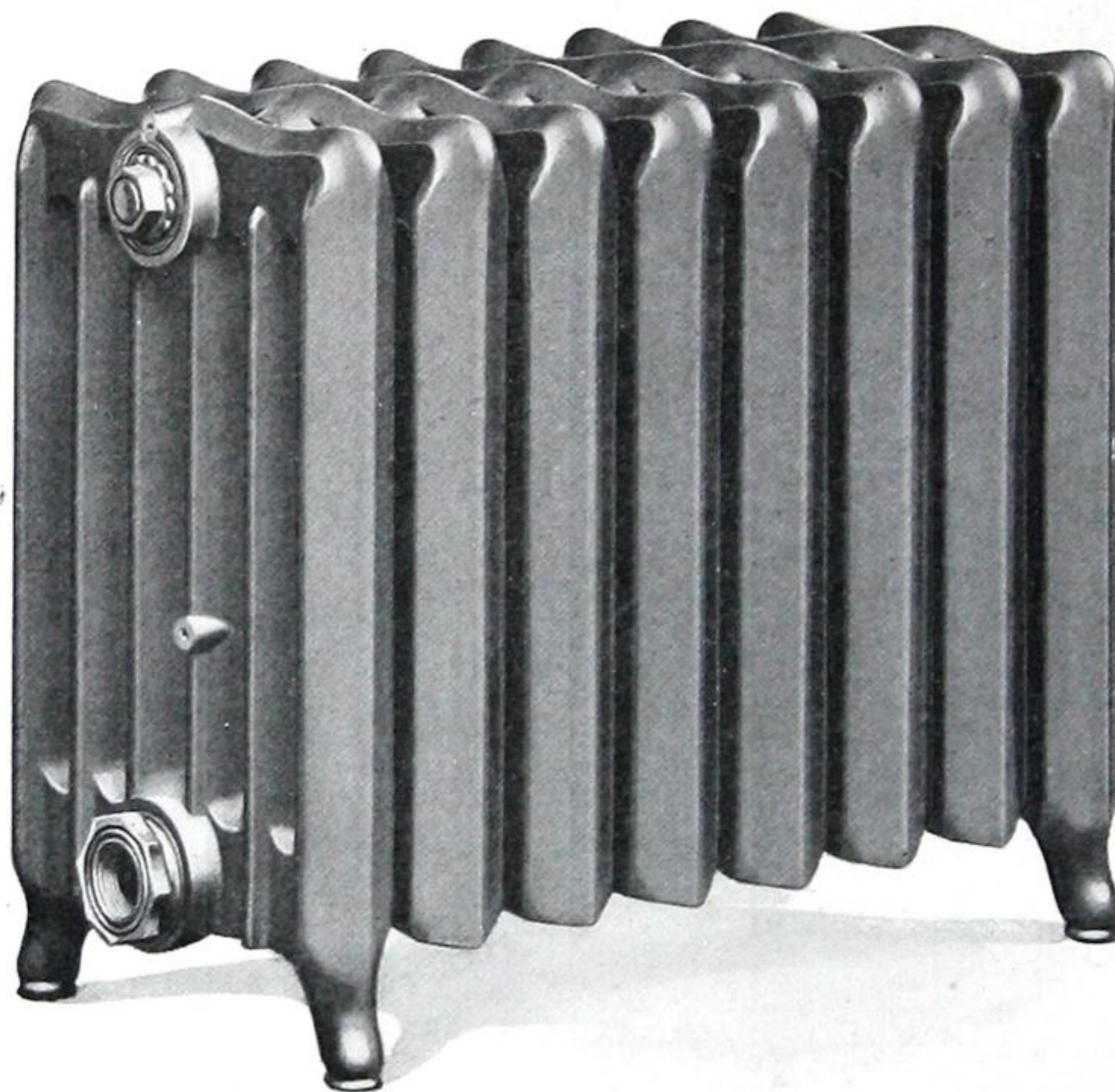
* In estimating length of radiator allow $\frac{1}{2}$ inch for each plug or bushing.

Width of section 12 $\frac{3}{4}$ inches Width of leg 12 $\frac{3}{4}$ inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**REGINA**

WINDOW RADIATOR
SIX-COLUMN
PLAIN



FOR
STEAM OR WATER

SAFFORD RADIATORS**REGINA SIX-COLUMN WINDOW PLAIN RADIATORS**

FOR STEAM OR WATER

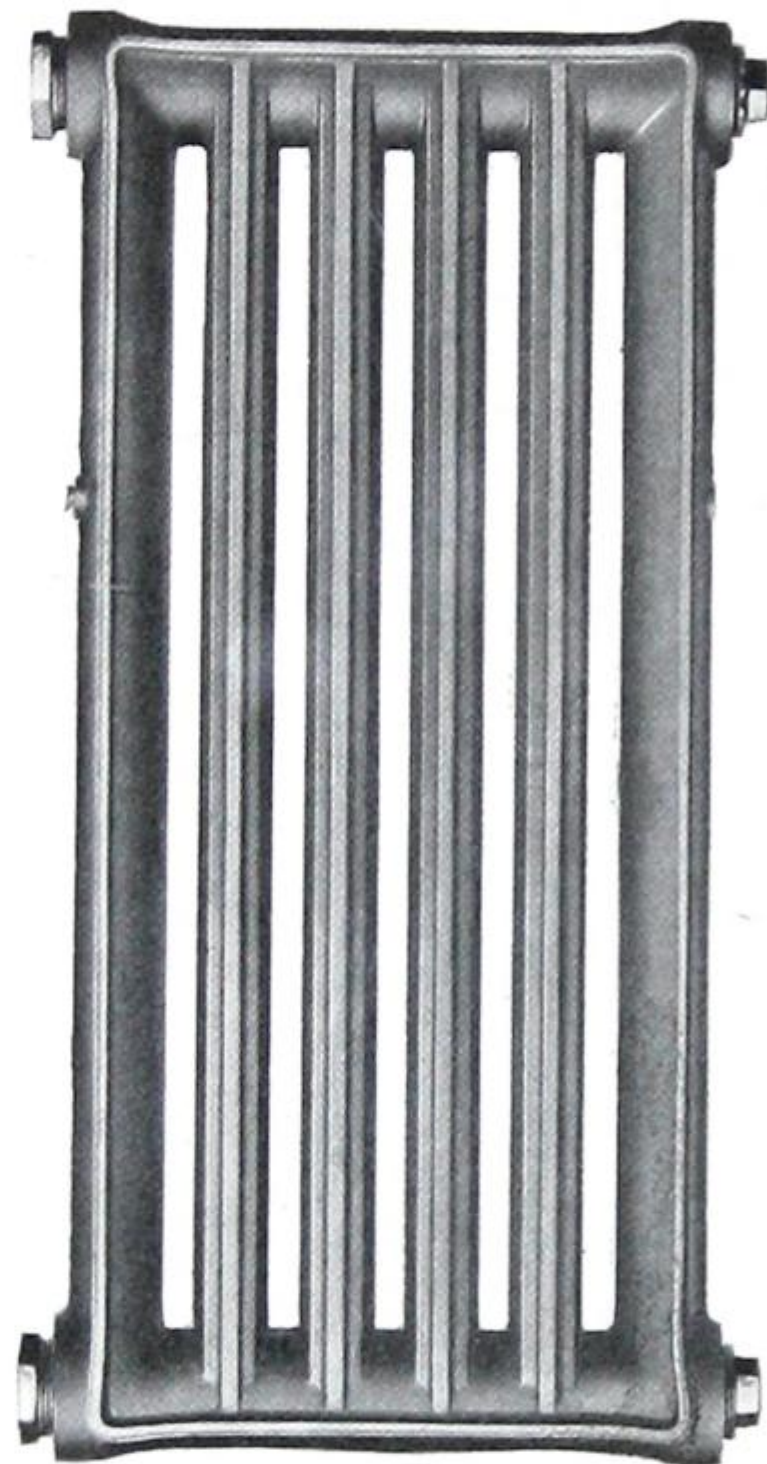
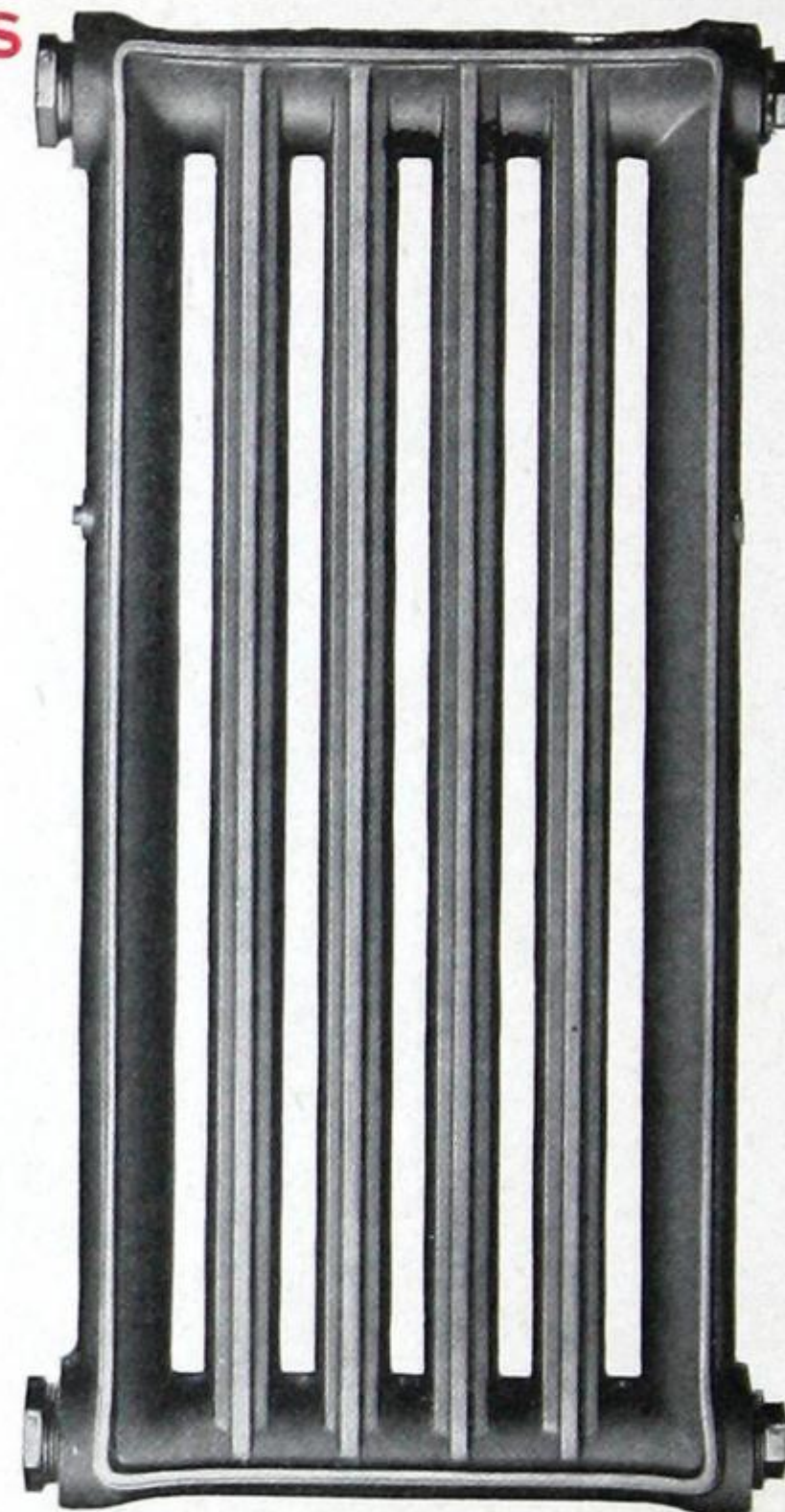
CAPACITIES AND DIMENSIONS

No. of Sections	* Length 3" per Section	HEATING SURFACE									
		20" in Height		18" in Height		16" in Height		14" in Height		13" in Height	
		5 Sq. Ft. per Section	Equivalent 1-in. Pipe	4 1/4 Sq. Ft. per Section	Equivalent 1-in. Pipe	3 3/4 Sq. Ft. per Section	Equivalent 1-in. Pipe	3 1/4 Sq. Ft. per Section	Equivalent 1-in. Pipe	3 Sq. Ft. per Section	Equivalent 1-in. Pipe
2	6	10	30	8 1/2	25 1/2	7 1/2	22 1/2	6 1/2	19 1/2	6	18
3	9	15	45	12 3/4	38 1/4	11 1/4	33 3/4	9 3/4	29 1/4	9	27
4	12	20	60	17	51	15	45	13	39	12	36
5	15	25	75	21 1/4	63 3/4	18 3/4	56 1/4	16 1/4	48 3/4	15	45
6	18	30	90	25 1/2	76 1/2	22 1/2	67 1/2	19 1/2	58 1/2	18	54
7	21	35	105	29 3/4	89 1/4	26 1/4	78 3/4	22 3/4	68 1/4	21	63
8	24	40	120	34	102	30	90	26	78	24	72
9	27	45	135	38 1/4	114 3/4	33 3/4	101 1/4	29 1/4	87 3/4	27	81
10	30	50	150	42 1/2	127 1/2	37 1/2	112 1/2	32 1/2	97 1/2	30	90
11	33	55	165	46 3/4	140 1/4	41 1/4	123 3/4	35 1/4	107 1/4	33	99
12	36	60	180	51	153	45	135	39	117	36	108
13	39	65	195	55 1/4	165 3/4	48 3/4	146 1/4	42 1/4	126 3/4	39	117
14	42	70	210	59 1/2	178 1/2	52 1/2	157 1/2	45 1/2	136 1/2	42	126
15	45	75	225	63 3/4	191 1/4	56 1/4	168 3/4	48 3/4	146 1/4	45	135
16	48	80	240	68	204	60	180	52	156	48	144
17	51	85	255	72 1/4	216 3/4	63 3/4	191 1/4	55 1/4	165 3/4	51	153
18	54	90	270	76 1/2	229 1/2	67 1/2	202 1/2	58 1/2	175 1/2	54	162
19	57	95	285	80 3/4	242 1/4	71 1/4	213 3/4	61 3/4	185 1/4	57	171
20	60	100	300	85	255	75	225	65	195	60	180
21	63	105	315	89 1/4	267 3/4	78 3/4	236 1/4	68 1/4	204 3/4	63	189
22	66	110	330	93 1/2	280 1/2	82 1/2	247 1/2	71 1/2	214 1/2	66	198
23	69	115	345	97 3/4	293 1/4	86 1/4	258 3/4	74 3/4	224 1/4	69	207
24	72	120	360	102	306	90	270	78	234	72	216
25	75	125	375	106 1/4	318 3/4	93 3/4	281 1/4	81 1/4	243 3/4	75	225

* In estimating length of radiator allow 1/2 inch for each plug or bushing.

Width of section 12 1/16 inches. Width of leg 12 1/16 inches. Additional measurements on pages 202 and 203.

Made in twin and single connections. Tapped and bushed as per schedules, on pages 198 or 199 unless otherwise ordered.

SAFFORD RADIATORS**STANDARD****WALL
PLAIN****FOR
STEAM OR WATER****7-Foot Section****9-Foot Section**

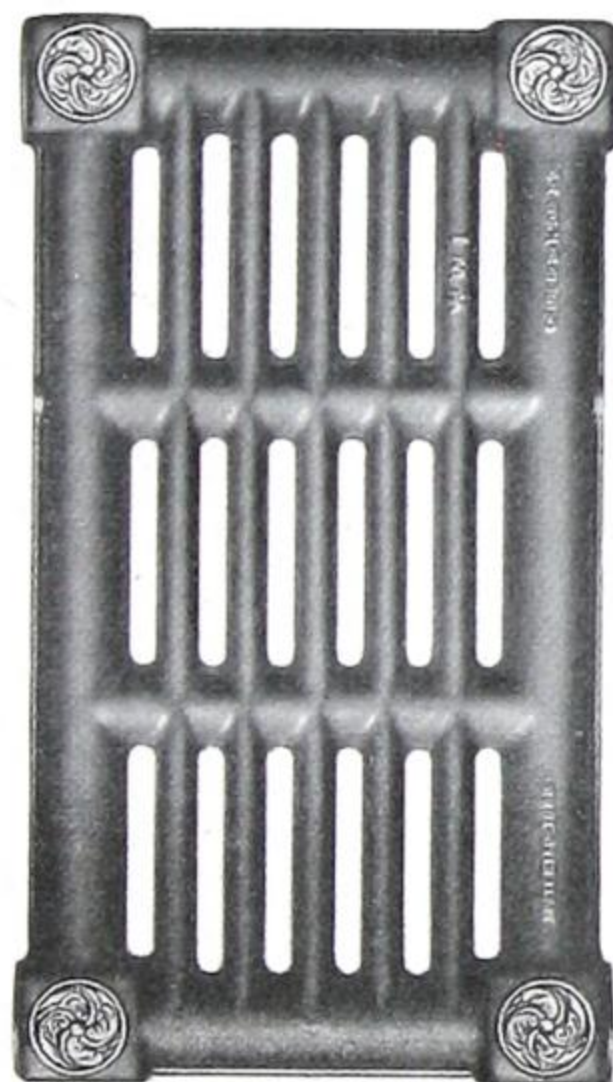
For measurements and dimensions, see page 161.

SAFFORD RADIATORS

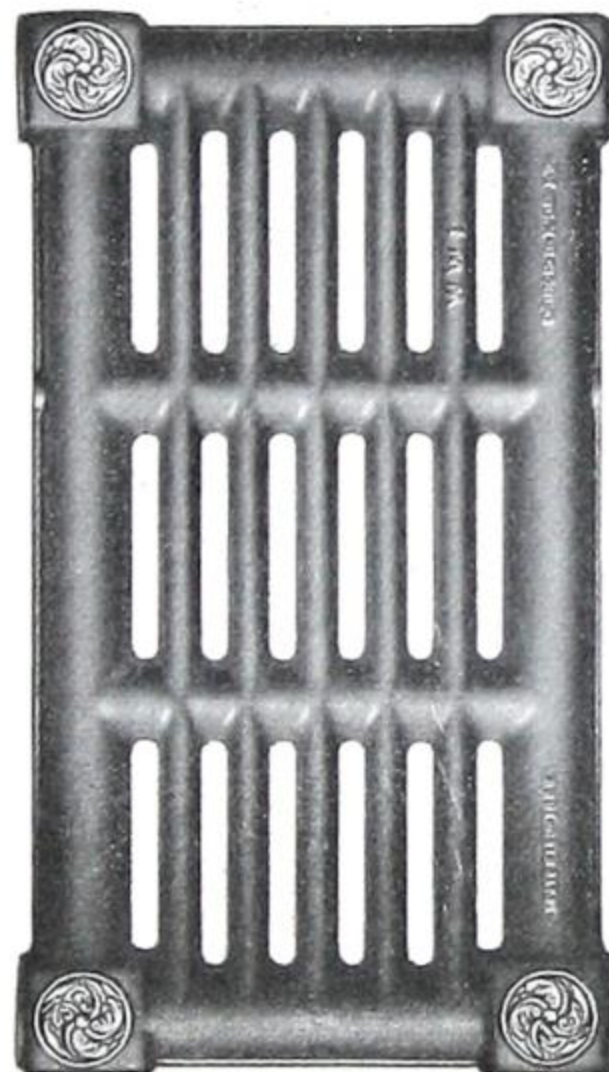
ONTARIO WALL—PLAIN FOR WATER OR STEAM



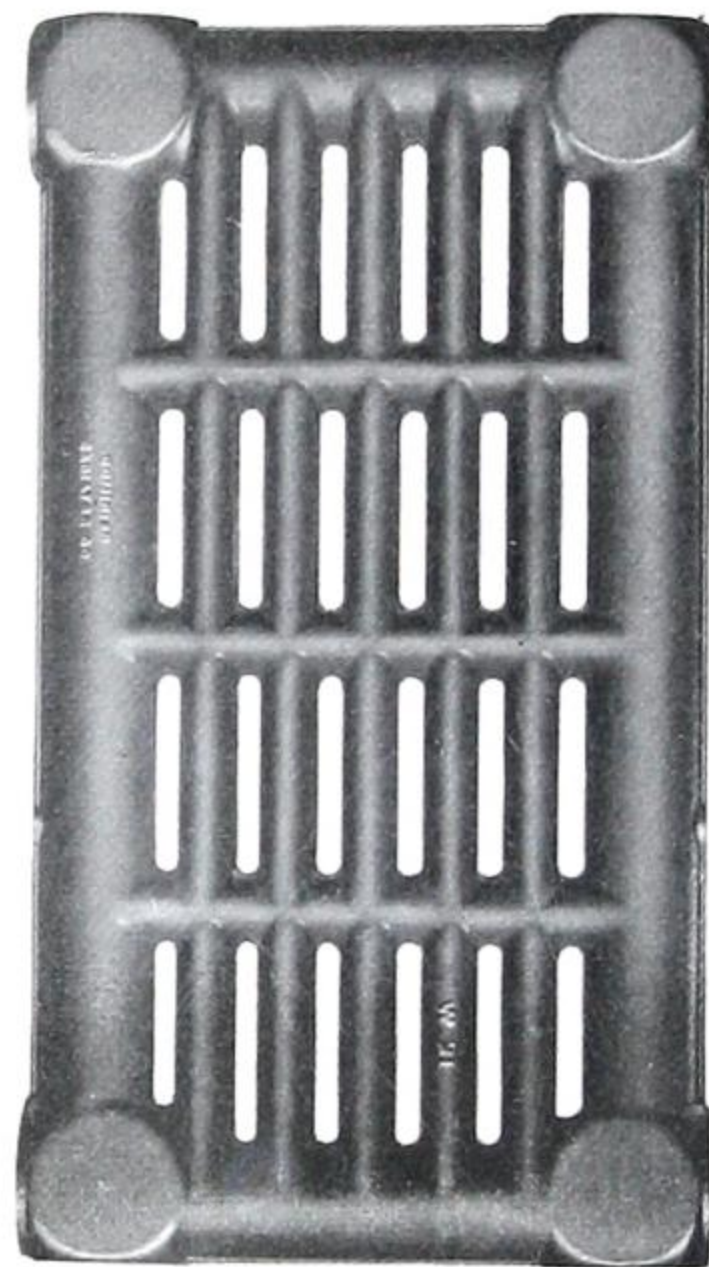
5 Foot Section



7 Foot Section



9 Foot Section

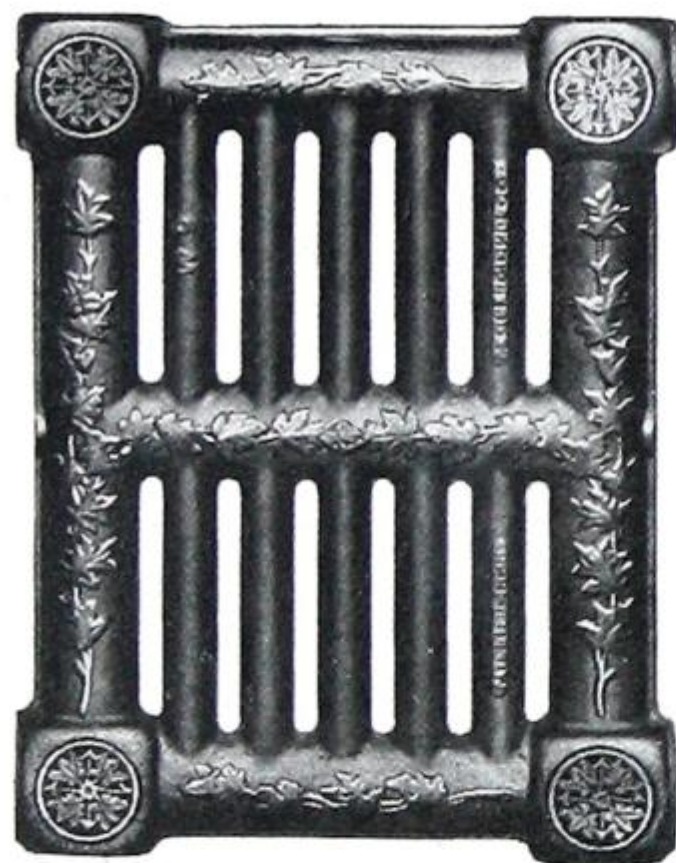


12 Foot Section

For measurements and dimensions, see page 161.

SAFFORD RADIATORS**PRINCESS**

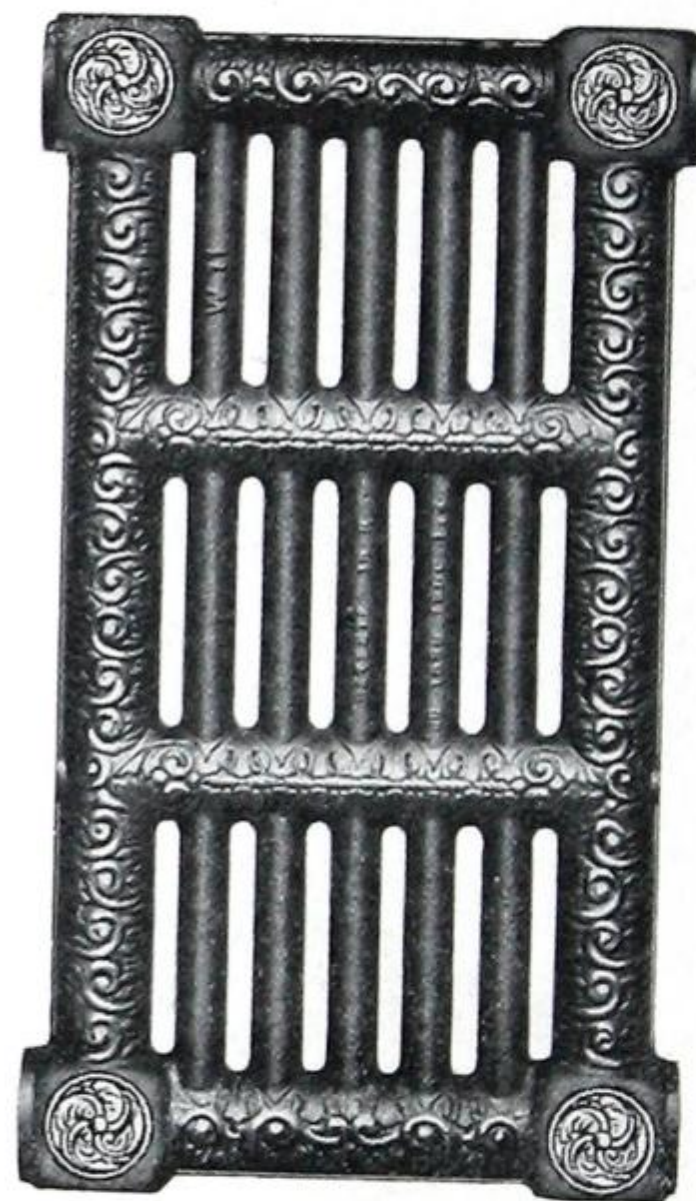
WALL—ORNAMENTAL
FOR WATER OR STEAM



5 Foot Section



6 Foot Section



7 Foot Section



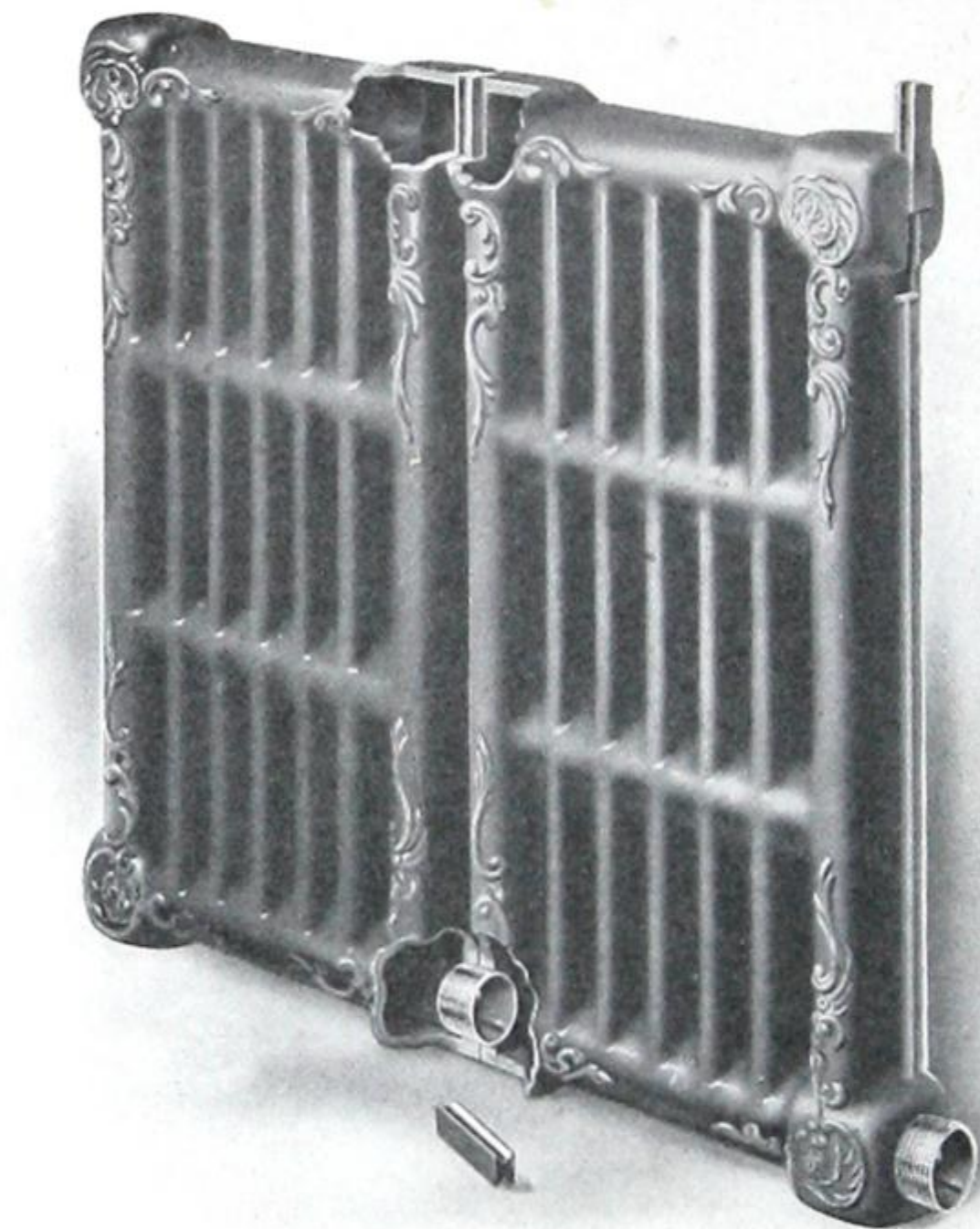
9 Foot Section

For measurements and dimensions, see page 161.

SAFFORD RADIATORS**WALL RADIATORS****CAPACITIES AND DIMENSIONS**

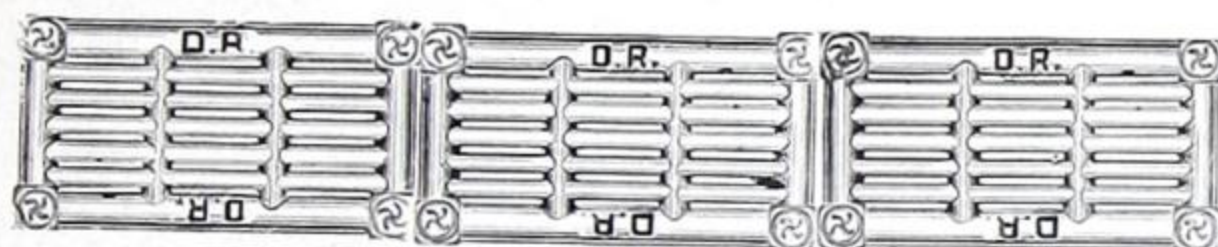
Pattern	Sq. Feet Heating Surface	Equiva- lent of 1" Pipe	Length Inches	Width Inches	Thick- ness Inches	Distance between centres of Tappings, inches	
						End of Section	Side of Section
Standard Plain	7	21	$23\frac{3}{8}$	13	$3\frac{1}{8}$	$10\frac{1}{2}$	$20\frac{3}{8}$
" "	9	27	$29\frac{3}{8}$	13	$3\frac{1}{8}$	$10\frac{1}{2}$	$26\frac{1}{4}$
Ontario Plain	5	15	17	13	3	10	$14\frac{1}{8}$
" "	7	21	24	13	3	10	21
" "	9	27	24	13	$3\frac{3}{16}$	10	21
" "	12	36	28	15	$3\frac{5}{8}$	$11\frac{1}{16}$	24
Princess Ornamental	5	15	17	13	3	10	$14\frac{1}{8}$
" "	6	18	21	13	3	10	$17\frac{3}{4}$
" "	7	21	24	13	3	10	21
" "	9	27	24	13	$3\frac{3}{16}$	10	21

SAFFORD RADIATORS
NEW STEAM CONNECTION FOR WALL RADIATORS

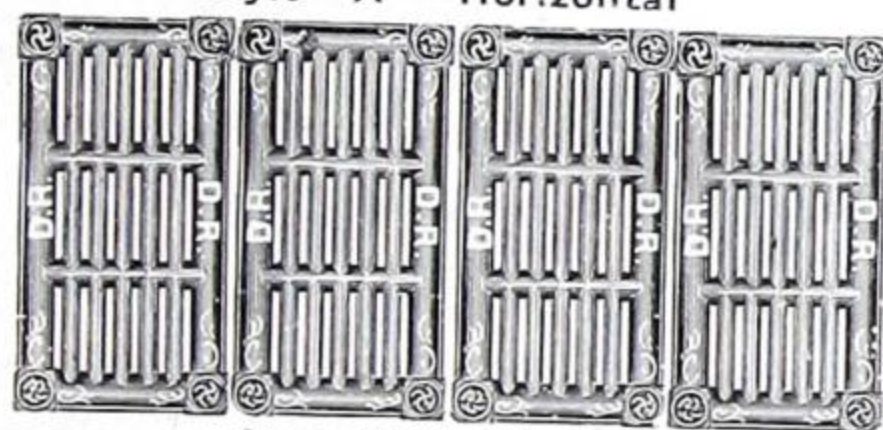


SAFFORD RADIATORS

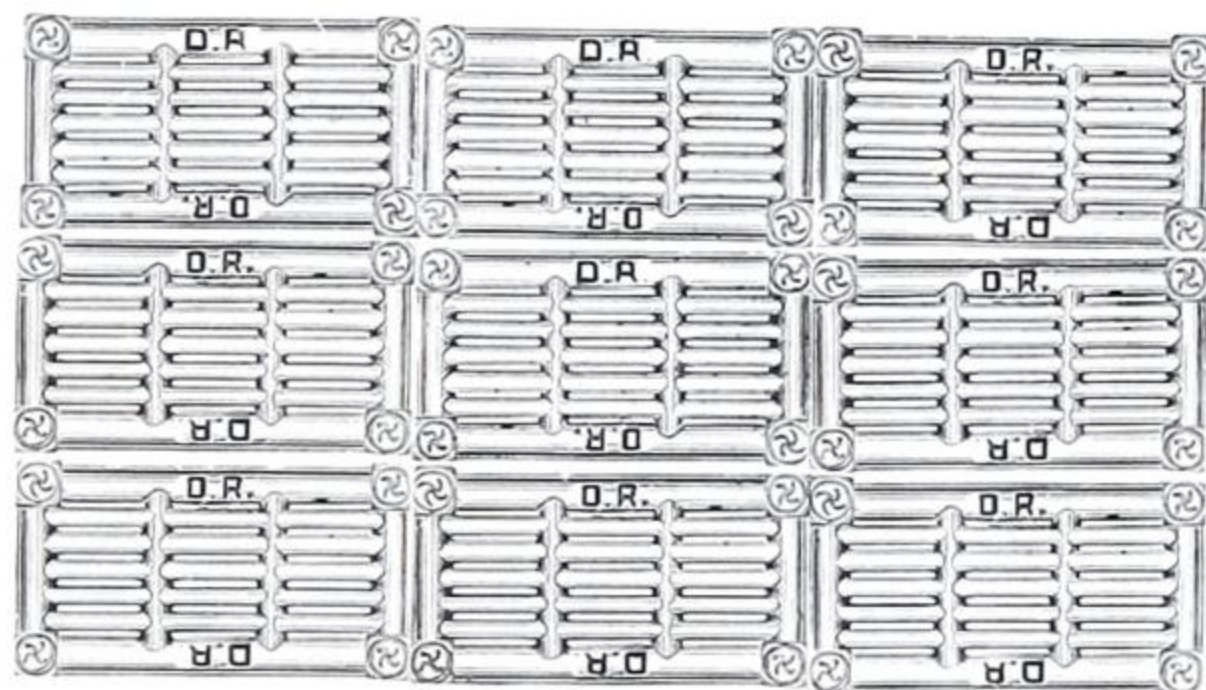
GENERAL FORMS OF ASSEMBLING



Style "A"—Horizontal



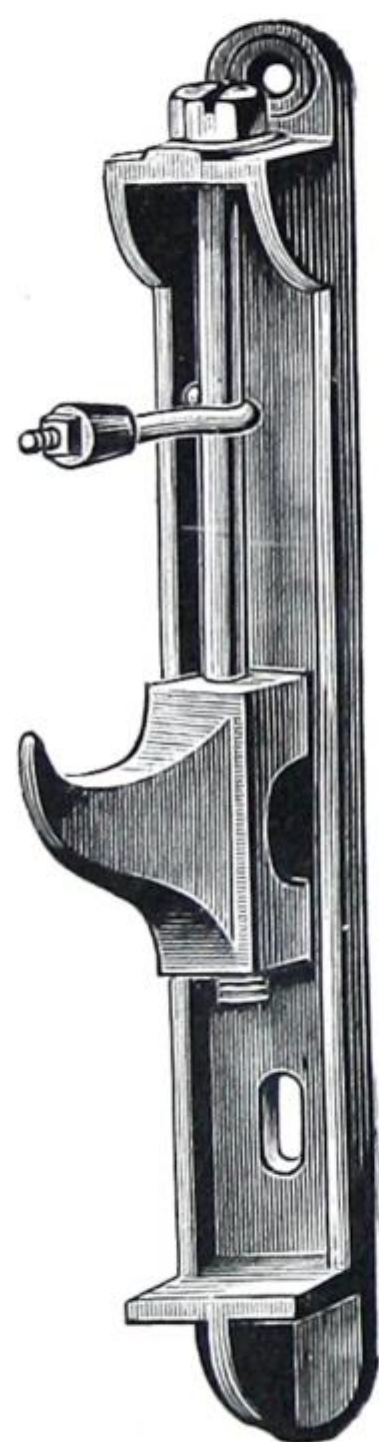
Style "C"—Vertical



Style "B"—Special

Any required number of sections can be assembled into Radiators in above illustrated forms. When ordering be particular to state which style is required. Orders should be accompanied by sketches showing size and style of connections desired.

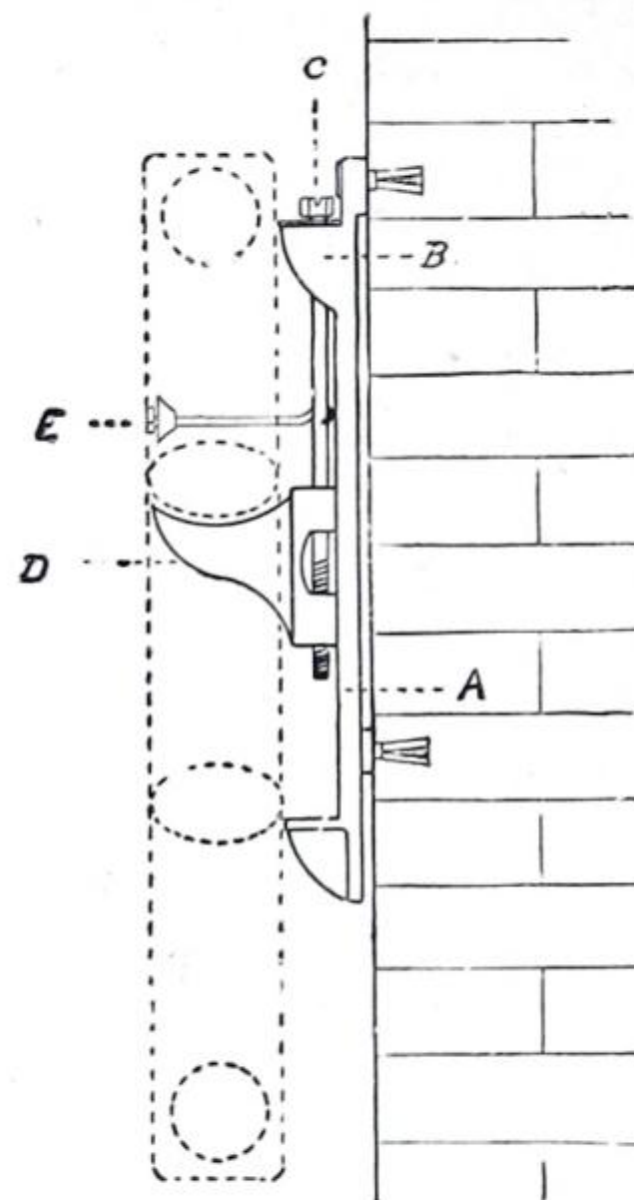
SAFFORD RADIATORS



V27 Vertical



H26 Horizontal



- A.—Wall Plate, anchored to wall by expansion bolts or screws.
 B.—Saddle, through which passes a long screw.
 C.—Bolt, having slotted head.
 D.—Hook, by which the radiator is supported.
 E.—Tie Bolt.

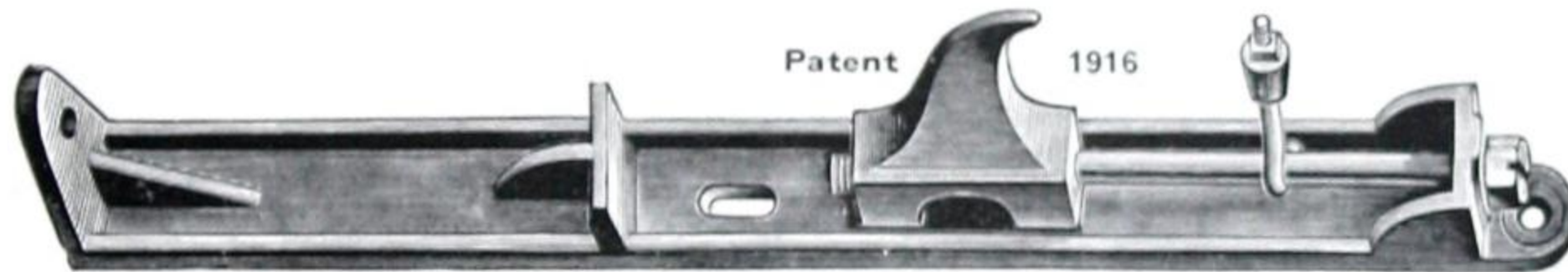
LATEST IMPROVED SUSPENSION
WALL RADIATOR BRACKETS

Patent 1916

THESE Brackets are the result of many years' experience; they may be attached to a brick, concrete or any other wall. They hold the radiator securely, and provide for all expansion and contraction. Being adjustable, they are easily raised or lowered by means of a screw bolt, before or after the radiator is in place. The range of adjustment is 3 inches up or down.

The recommended location of the lock-nut is midway of the thread on long bolt, from which point the radiator may be raised or lowered $1\frac{1}{2}$ inches.

For list price, see page 167.

SAFFORD RADIATORS**No. H or V 28 DUCK-FOOT SUSPENSION BRACKET****Horizontal or Vertical**

This support has the same features of adjustment and allowance for expansion and contraction as the No. V 27 Wall Suspension Bracket, but is provided with an extension to rest on floor.

Has no offset for baseboard.

Height of centre of tapping from the floor, $8\frac{3}{4}$ inches.

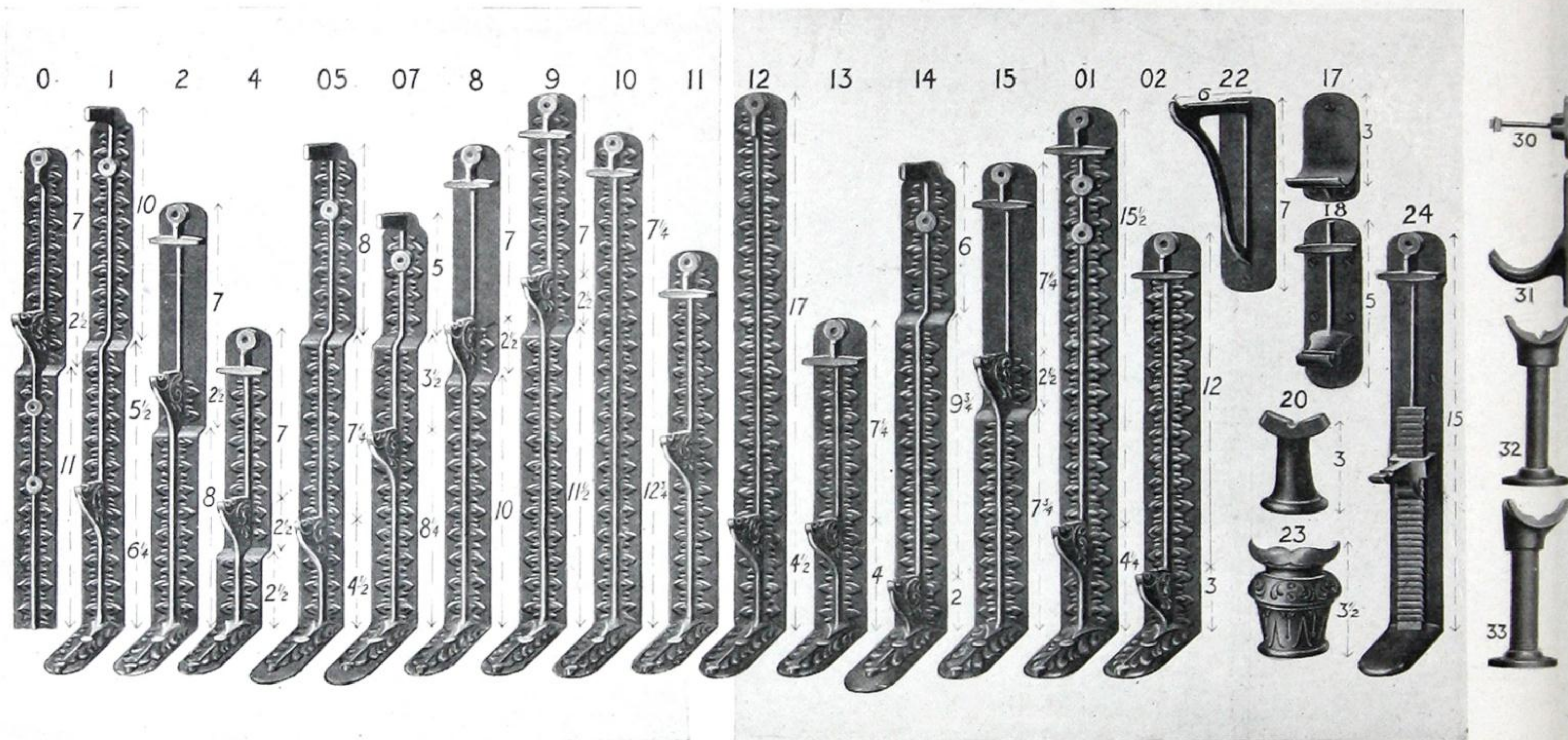
Regularly furnished with one screw hole at top to secure bracket to wall, and one through foot to secure to floor.

When ordering the No. V 27 Suspension Wall Bracket, or the No. H or V 28 Duck-Foot Suspension Bracket separately, state whether for Vertical or Horizontal Radiators; also size of section.

For list price, see page 167.

SAFFORD RADIATORS

WALL RADIATOR BRACKETS



No. 24 Adjustable Bracket (Patented) can be adjusted to any height above floor from 3 to 9 inches. For list price, see page 167.

SAFFORD RADIATORS**WALL RADIATOR BRACKETS****List Prices**

Nos.	List Price, Each	Nos.	List Price, Each	Nos.	List Price, Each	Nos.	List Price, Each
0	50 cents	10	50 cents	22	20 cents	30	50 cents
1	50 "	11	45 "	20	20 "	31	1.00 "
2	45 "	12	50 "	17	8 "	32	60 "
4	40 "	13	40 "	18	10 "	33	60 "
05	50 "	14	45 "	23	30 "		
07	45 "	15	45 "	24	60 "		
8	50 "	01	50 "	H26-V27	1.75 "		
9	50 "	02	45 "	H28-H28	2.35 "		

SAFFORD RADIATORS

DIRECT-INDIRECT RADIATORS

VENTILATING RADIATORS

IDEAL FLUE VENTILATING RADIATORS

FOR WATER OR STEAM

Attention is directed to the peculiar advantages of this type of radiator, when equipped with the Box-Base as a ventilating medium of the direct-indirect type.

The principle of construction of the Box-Base is such that all the air necessary for ventilation may be taken from without the building by means of air conduit in wall, and distributed through the Base into the interior or flue surface of radiator. The dampers in the Base may be adjusted to reduce the air supply if the outside temperature is very low, or the dampers may be entirely closed if desired, thus converting the radiator for the time into a direct radiator.

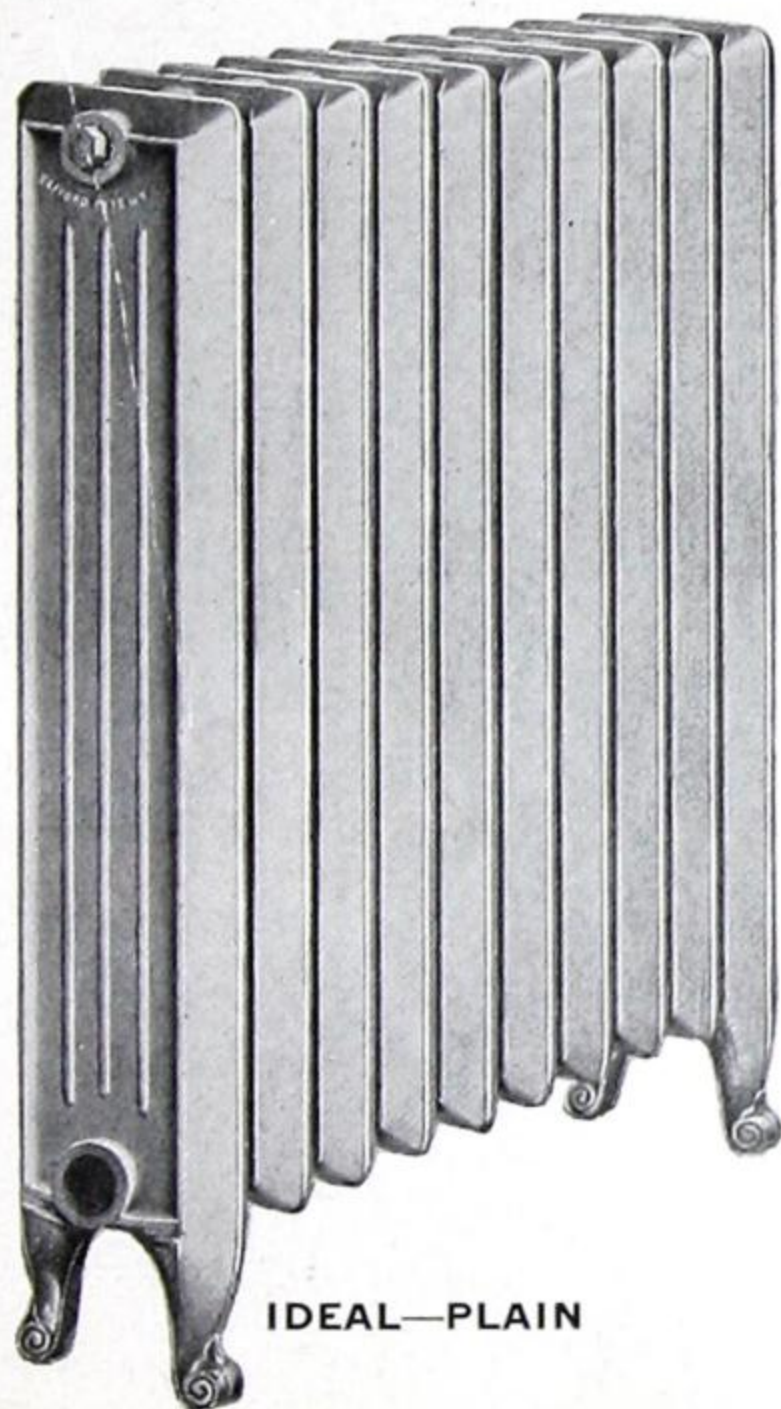
The special features of this Box-Base are simplicity of construction, ease of operation, and splendid distribution of air supply. The Base being entirely underneath the radiator and well recessed, is not liable to damage. The front of Base may be easily removed for cleaning purposes. Dampers may be operated by slight pressure of foot.

SAFFORD RADIATORS

IDEAL

FLUE VENTILATING

**FOR
STEAM OR WATER**



IDEAL—PLAIN



IDEAL—ORNAMENTAL

SAFFORD RADIATORS**IDEAL FLUE VENTILATING RADIATORS**

FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

No. of Sections	* Length 3" per Section	HEATING SURFACE									
		42" in Height		38" in Height		32" in Height		26" in Height		20" in Height	
		8 $\frac{1}{4}$ Sq. Ft. per Section	Equivalent 1-in. Pipe	7 Sq. Ft. per Section	Equivalent 1-in. Pipe	5 $\frac{3}{4}$ Sq. Ft. per Section	Equivalent 1-in. Pipe	4 $\frac{1}{2}$ Sq. Ft. per Section	Equivalent 1-in. Pipe	3 $\frac{1}{4}$ Sq. Ft. per Section	Equivalent 1-in. Pipe
2	6	16 $\frac{1}{2}$	49 $\frac{1}{2}$	14	42	11 $\frac{1}{2}$	34 $\frac{1}{2}$	9	27	6 $\frac{1}{2}$	19 $\frac{1}{2}$
3	9	24 $\frac{3}{4}$	74 $\frac{1}{4}$	21	63	17 $\frac{1}{4}$	51 $\frac{3}{4}$	13 $\frac{1}{2}$	40 $\frac{1}{2}$	9 $\frac{3}{4}$	29 $\frac{1}{4}$
4	12	33	99	28	84	23	69	18	54	13	39
5	15	41 $\frac{1}{4}$	123 $\frac{3}{4}$	35	105	28 $\frac{3}{4}$	86 $\frac{1}{4}$	22 $\frac{1}{2}$	67 $\frac{1}{2}$	16 $\frac{1}{4}$	48 $\frac{3}{4}$
6	18	49 $\frac{1}{2}$	148 $\frac{1}{2}$	42	126	34 $\frac{1}{2}$	103 $\frac{1}{2}$	27	81	19 $\frac{1}{2}$	58 $\frac{1}{2}$
7	21	57 $\frac{3}{4}$	173 $\frac{1}{4}$	49	147	40 $\frac{1}{4}$	120 $\frac{3}{4}$	31 $\frac{1}{2}$	94 $\frac{1}{2}$	22 $\frac{3}{4}$	68 $\frac{1}{4}$
8	24	66	198	56	168	46	138	36	108	26	78
9	27	74 $\frac{1}{4}$	222 $\frac{3}{4}$	63	189	51 $\frac{3}{4}$	155 $\frac{1}{4}$	40 $\frac{1}{2}$	121 $\frac{1}{2}$	29 $\frac{1}{4}$	87 $\frac{3}{4}$
10	30	82 $\frac{1}{2}$	247 $\frac{1}{2}$	70	210	57 $\frac{1}{2}$	172 $\frac{1}{2}$	45	135	32 $\frac{1}{2}$	97 $\frac{1}{2}$
11	33	90 $\frac{3}{4}$	272 $\frac{1}{4}$	77	231	63 $\frac{1}{4}$	189 $\frac{3}{4}$	49 $\frac{1}{2}$	148 $\frac{1}{2}$	35 $\frac{3}{4}$	107 $\frac{1}{4}$
12	36	99	297	84	252	69	207	54	162	39	117
13	39	107 $\frac{1}{4}$	321 $\frac{3}{4}$	91	273	74 $\frac{3}{4}$	224 $\frac{1}{4}$	58 $\frac{1}{2}$	175 $\frac{1}{2}$	42 $\frac{1}{4}$	126 $\frac{3}{4}$
14	42	115 $\frac{1}{2}$	346 $\frac{1}{2}$	98	294	80 $\frac{1}{2}$	241 $\frac{1}{2}$	63	189	45 $\frac{1}{2}$	136 $\frac{1}{2}$
15	45	123 $\frac{3}{4}$	371 $\frac{1}{4}$	105	315	86 $\frac{1}{4}$	258 $\frac{3}{4}$	67 $\frac{1}{2}$	202 $\frac{1}{2}$	48 $\frac{3}{4}$	146 $\frac{1}{4}$
16	48	132	396	112	336	92	276	72	216	52	156
17	51	140 $\frac{1}{4}$	420 $\frac{3}{4}$	119	357	97 $\frac{3}{4}$	293 $\frac{1}{4}$	76 $\frac{1}{2}$	229 $\frac{1}{2}$	55 $\frac{1}{4}$	165 $\frac{3}{4}$
18	54	148 $\frac{1}{2}$	445 $\frac{1}{2}$	126	378	103 $\frac{1}{2}$	310 $\frac{1}{2}$	81	243	58 $\frac{1}{2}$	175 $\frac{1}{2}$
19	57	156 $\frac{3}{4}$	470 $\frac{1}{4}$	133	399	109 $\frac{1}{4}$	327 $\frac{3}{4}$	85 $\frac{1}{2}$	256 $\frac{1}{2}$	61 $\frac{3}{4}$	185 $\frac{1}{4}$
20	60	165	495	140	420	115	345	90	270	65	195
21	63	173 $\frac{1}{4}$	519 $\frac{3}{4}$	147	441	120 $\frac{3}{4}$	362 $\frac{1}{4}$	94 $\frac{1}{2}$	283 $\frac{1}{2}$	68 $\frac{1}{4}$	204 $\frac{3}{4}$
22	66	181 $\frac{1}{2}$	544 $\frac{1}{2}$	154	462	126 $\frac{1}{2}$	379 $\frac{1}{2}$	99	297	71 $\frac{1}{2}$	214 $\frac{1}{2}$
23	69	189 $\frac{3}{4}$	569 $\frac{1}{4}$	161	483	132 $\frac{1}{4}$	396 $\frac{3}{4}$	103 $\frac{1}{2}$	310 $\frac{1}{2}$	74 $\frac{3}{4}$	224 $\frac{1}{4}$
24	72	198	594	168	504	138	414	108	324	78	234
25	75	206 $\frac{1}{4}$	618 $\frac{3}{4}$	175	525	143 $\frac{3}{4}$	431 $\frac{1}{4}$	112 $\frac{1}{2}$	337 $\frac{1}{2}$	81 $\frac{1}{4}$	243 $\frac{3}{4}$

* In estimating length of radiator allow $\frac{1}{2}$ inch for each plug or bushing.

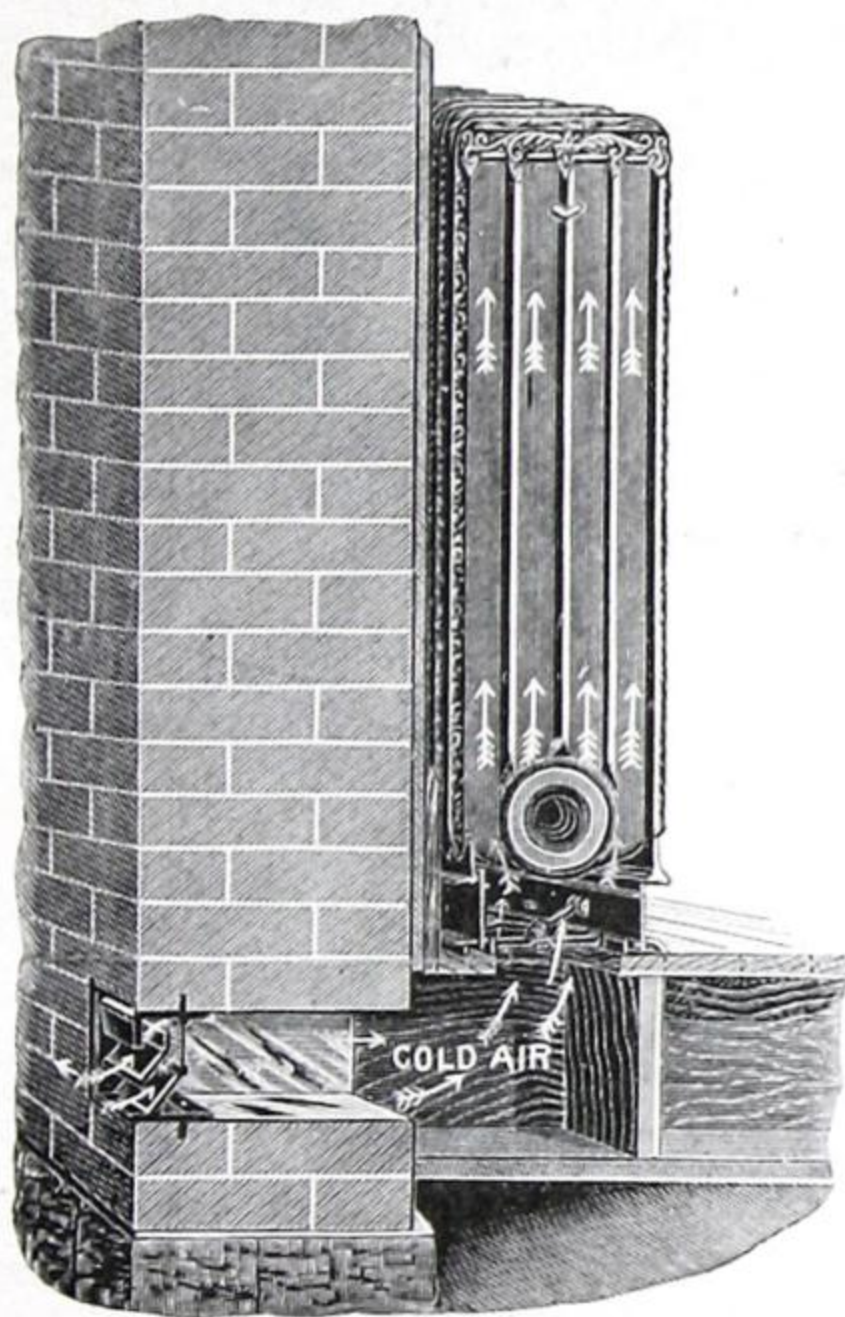
Width of section 8 $\frac{3}{4}$ inches, width of legs 8 $\frac{3}{4}$ inches. Additional measurements on pages 202 and 203.
 single connections. Tapped and bushed as per schedules on pages 198 or 199 unless otherwise ordered.
 For information regarding ventilating bases, see pages 171 to 175.

Made in twin and

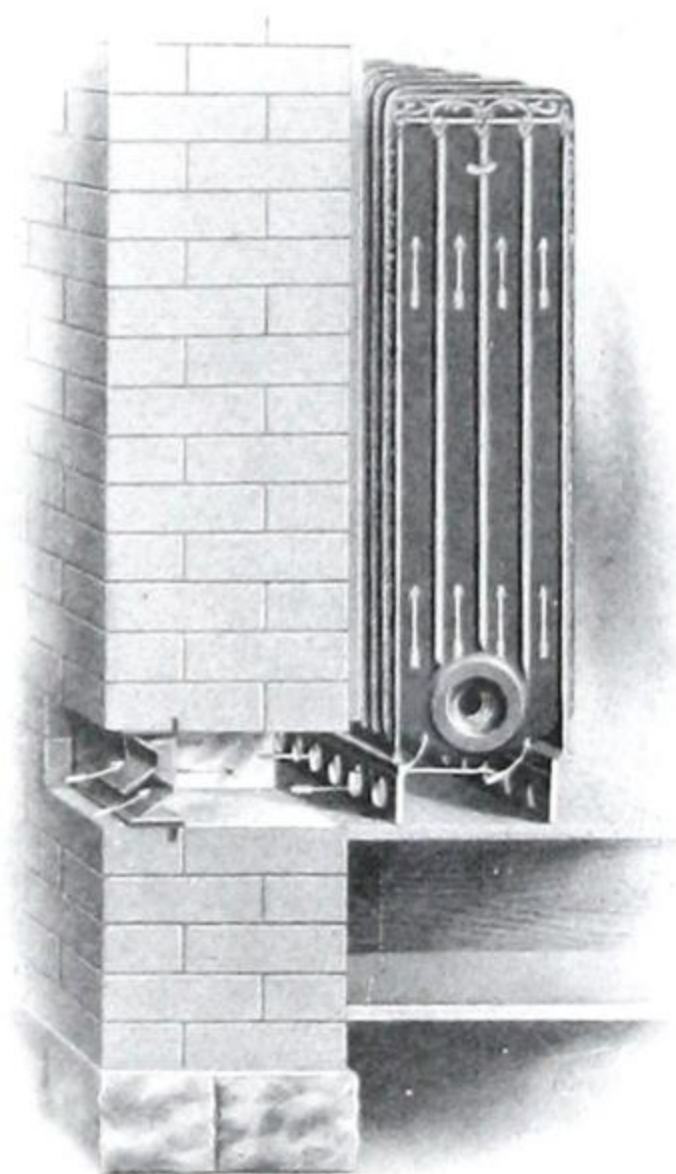
SAFFORD RADIATORS

IDEAL
FLUE VENTILATING
DIRECT-INDIRECT
RADIATORS

FOR
STEAM OR
WATER



Bottom Air Inlet



Back Air Inlet

SAFFORD RADIATORS**IDEAL FLUE VENTILATING DIRECT-INDIRECT RADIATOR BOX BASES****Measurements of Air Inlets****Floor Inlet**

Where the air is brought through the floor to radiator (see page 171) the dimensions of opening in floor to be covered by damper in base should be as follows:—

Base	Inches	Base	Inches
5 Section	5 x 7	13 Section	4½x26
6 “	4½x10	14 “	4½x29
7 “	4½x11	15 “	4½x32
8 “	4½x11¼	16 “	4½x35
9 “	4½x14	17 “	4½x38
10 “	4½x17	18 “	4½x41
11 “	4½x20	19 “	4½x44
12 “	4½x23	20 “	4½x47

Back Inlet

Where the air is brought direct through the wall into the base, (see page 171) the outside measurements of collar for attaching fresh air duct are as follows:—

Base	Inches	Base	Inches
3 Section	3 x 2¾	12 Section	3½x23
4 “	3 x 4	13 “	3½x26
5 “	3 x 7	14 “	3½x29
6 “	3 x 8½	15 “	3½x32
7 “	3½x11	16 “	3½x35
8 “	3½x11¼	17 “	3½x38
9 “	3½x14	18 “	3½x41
10 “	3½x17	19 “	3½x44
11 “	3½x20	20 “	3½x47

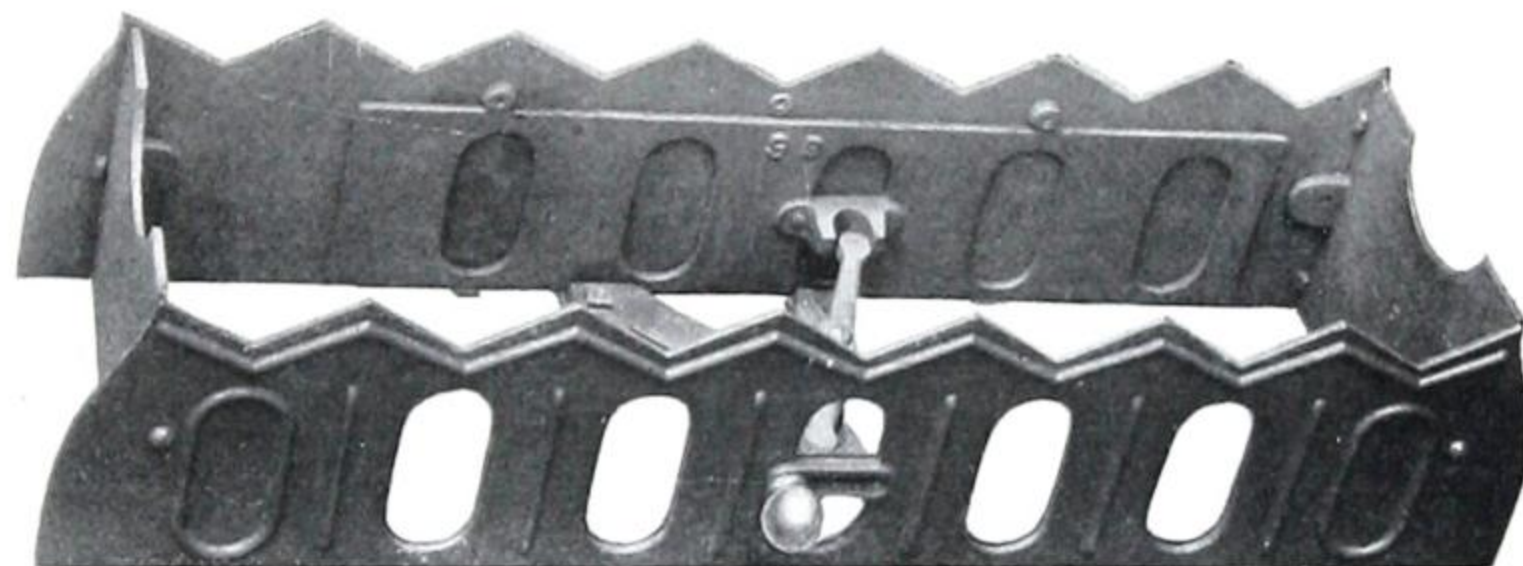
The usual openings through walls for the above box bases are:—Up to and including 9 sections a 3½x 8½ inch opening; 10 sections and above 3½x16 inch opening.

If desired, we can supply these bases for radiators of 7 sections to 20 sections with a flange for back air inlet 3x8½ inches.

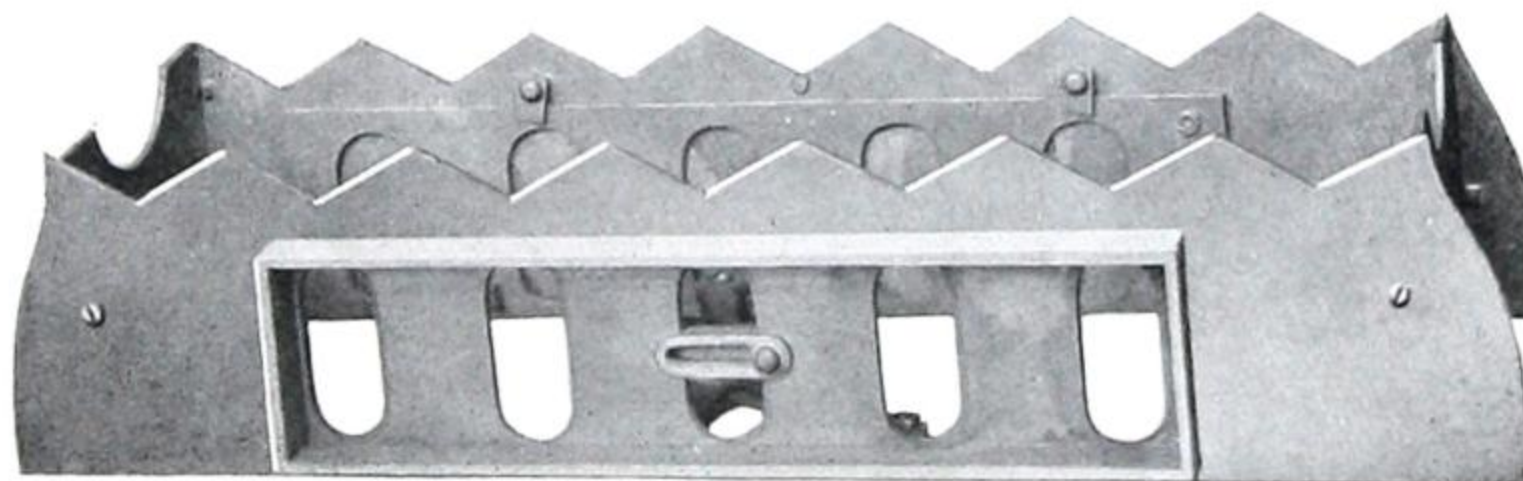
Note.—In ordering, please state whether back or floor inlet is desired.

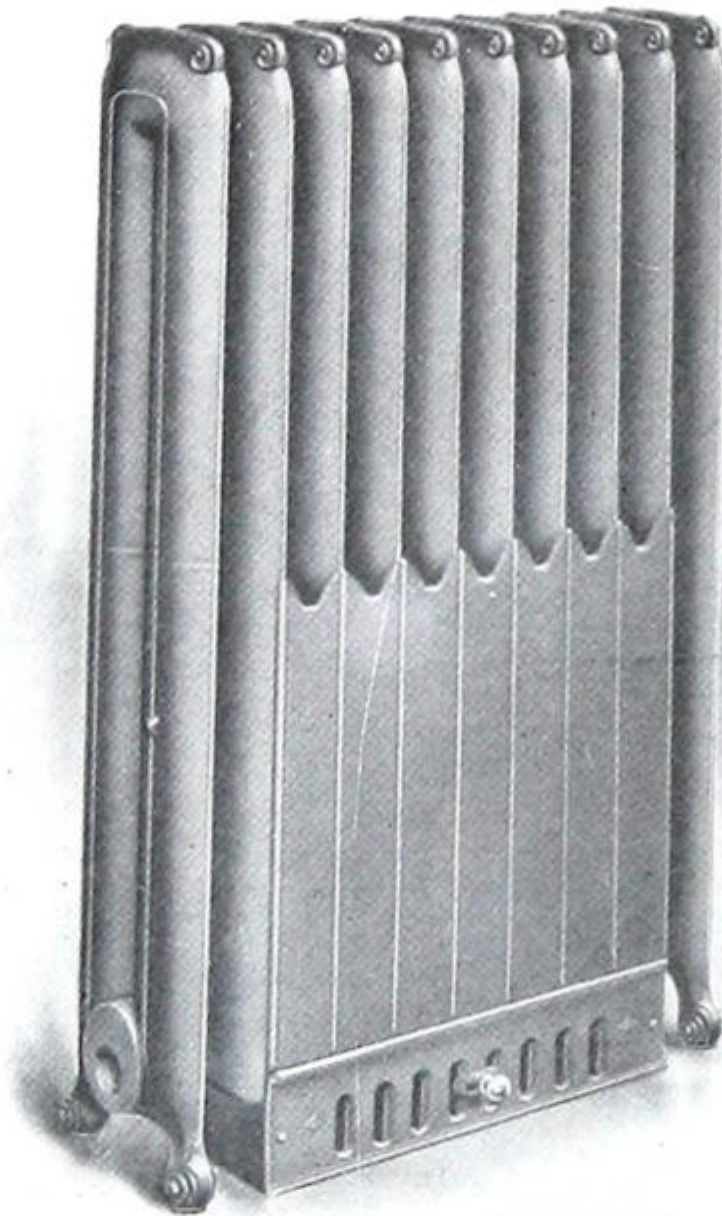
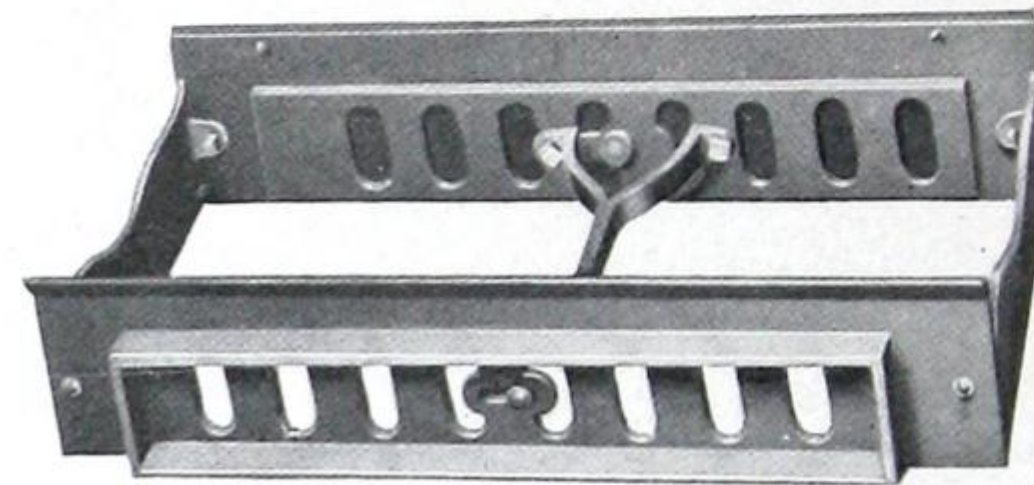
SAFFORD RADIATORS**IDEAL FLUE VENTILATING DIRECT-INDIRECT RADIATOR BOX BASES****List Prices**

Base for	3 Section Radiator,	\$1.20 each
Base for	4 Section Radiator,	1.60 each
Base for	5 Section Radiator,	2.00 each
Base for	6 Section Radiator,	2.40 each
Base for	7 Section Radiator,	2.80 each
Base for	8 Section Radiator,	3.20 each
Base for	9 Section Radiator,	3.60 each
Base for	10 Section Radiator,	4.00 each
Base for	11 Section Radiator,	4.40 each
Base for	12 Section Radiator,	4.80 each

**Front View**

Showing front damper open and back air inlet closed.

**Back View**Showing back air inlet damper open and front damper closed.
See measurements, page 172.

SAFFORD RADIATORS**ADJUSTABLE BOX BASE FOR DIRECT-INDIRECT RADIATORS
FOR STEAM OR WATER****Front View****Back View**

As will be seen by above illustration the dampers provided with this new box base are arranged so that when the back air inlet is opened the damper slide in the front of base is automatically closed, and vice versa. Where required we can supply these bases with floor inlet dampers arranged to operate in the same manner.

This new and improved portable Ventilating Base has been designed with a view to obviating the necessity for special radiator sections. It can be readily adjusted to any of our regular stock patterns of Safford direct Radiators.

The bases and plates for both bottom opening and front and back opening box bases are made for Saxon, Victoria and Regina, two column, three column and four column radiators. They have been designed with a view to supplying amount of air desired, and not with special reference to size of Radiator. Thus a 5 section box base may be used under Radiators of 7, 9 sections or larger (in odd sections). A 6 section base may be adjusted to Radiators of 8, 10 sections or larger (in even sections). These bases will enclose 5 or 6 middle loops respectively of any of Radiators mentioned.

SAFFORD RADIATORS**ADJUSTABLE BOX BASE FOR DIRECT-INDIRECT RADIATORS****Sizes of Collars for Back and Floor Inlet Dampers**

2 and 3 COLUMN BASES			4 COLUMN BASES		
No. of Base Sections	Size of Collar for Back Air Inlet, ins.	Size of Floor Inlet Damper, ins.	No. of Base Sections	Size of Collar for Back Air Inlet, ins.	Size of Floor Inlet Damper, ins.
5	$2\frac{3}{4}$ x 5	$5\frac{1}{2}$ x $6\frac{1}{2}$	5	$2\frac{3}{4}$ x 9	$5\frac{1}{2}$ x $6\frac{1}{2}$
6	$2\frac{3}{4}$ x 9	$5\frac{1}{2}$ x $6\frac{1}{2}$	6	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 11
7	$2\frac{3}{4}$ x 9	$5\frac{1}{2}$ x 11	7	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 11
8	$2\frac{3}{4}$ x 9	$5\frac{1}{2}$ x 11	8	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 18
9	$2\frac{3}{4}$ x 9	$5\frac{1}{2}$ x 11	9	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 18
10	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 11	10	$2\frac{3}{4}$ x 19	$5\frac{1}{2}$ x $28\frac{1}{2}$
11	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 18	11	$2\frac{3}{4}$ x 19	$5\frac{1}{2}$ x $28\frac{1}{2}$
12	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 18	12	$2\frac{3}{4}$ x 19	$5\frac{1}{2}$ x $36\frac{1}{2}$
13	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 18	13	$2\frac{3}{4}$ x 19	$5\frac{1}{2}$ x $36\frac{1}{2}$
14	$2\frac{3}{4}$ x 14	$5\frac{1}{2}$ x 18	14	$2\frac{3}{4}$ x 19	$5\frac{1}{2}$ x $44\frac{3}{4}$
15	$2\frac{3}{4}$ x 19	$5\frac{1}{2}$ x $28\frac{1}{2}$	15	$2\frac{3}{4}$ x 23	$5\frac{1}{2}$ x $44\frac{3}{4}$

Note:—Where Floor Inlet Dampers are required, same should be specially stated when ordering. Back Inlet Dampers will be furnished unless otherwise specified.

Description	List Price	Description	List Price
Direct-Indirect and Adjustable Box Bases		Direct-Indirect and Adjustable Box Bases	
For 5 Section Radiators.....	\$ 5.00 each	For 11 Section Radiators.....	\$11.00 each
For 6 Section Radiators.....	6.00 "	For 12 Section Radiators.....	12.00 "
For 7 Section Radiators.....	7.00 "	For 13 Section Radiators.....	13.00 "
For 8 Section Radiators.....	8.00 "	For 14 Section Radiators.....	14.00 "
For 9 Section Radiators.....	9.00 "	For 15 Section Radiators.....	15.00 "
For 10 Section Radiators.....	10.00 "		

SAFFORD RADIATORS**OUTSIDE WALL BOXES FOR DIRECT-INDIRECT RADIATORS**

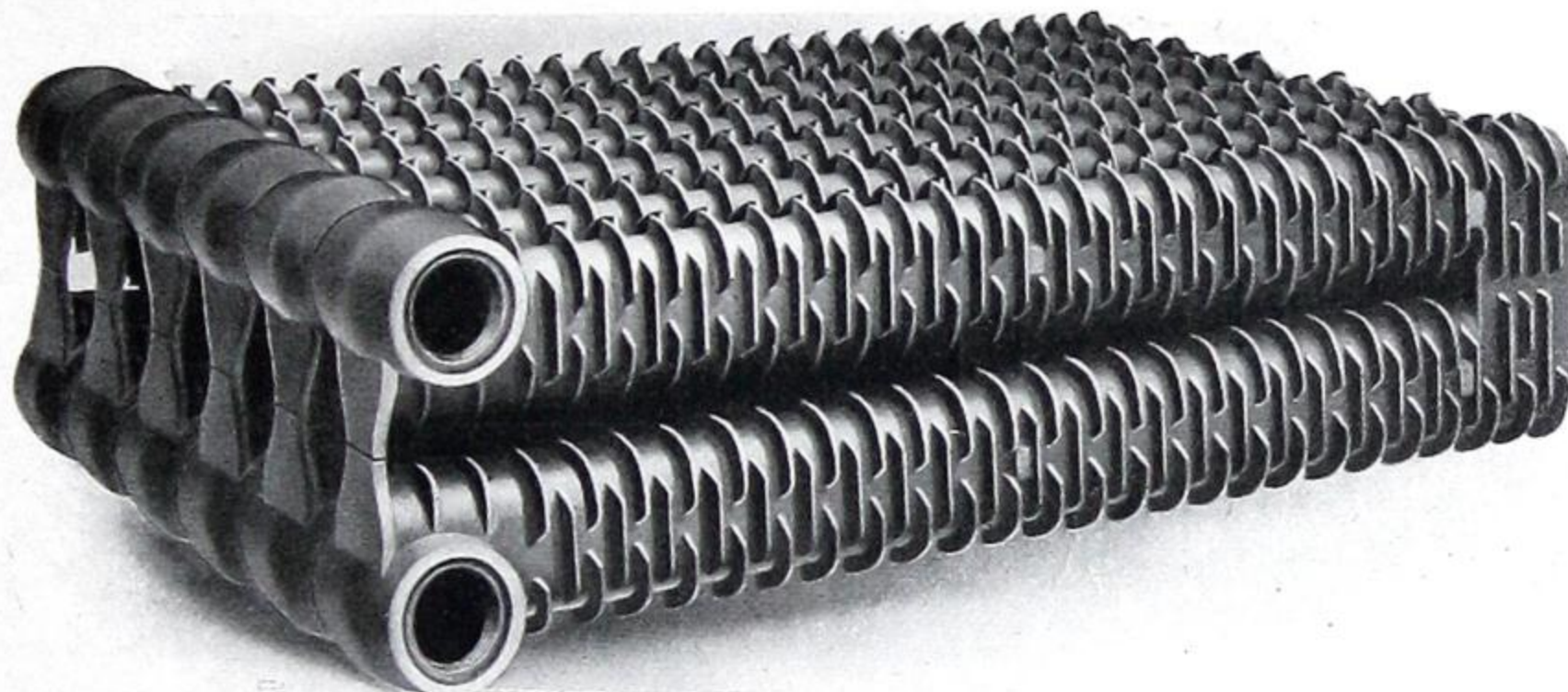
These Wall Boxes are constructed in a most substantial manner, the baffle plates and brass wire screen are so arranged as to render them storm and insect proof.

Outside measurement 5 x 17½ inches to conform with brick measure.

Outside measurement of flange for iron sleeve or collar 4¾ x 17 inches.

List price, each \$4.00

SAFFORD RADIATORS
CLIMAX
 INDIRECT RADIATORS



FOR STEAM OR WATER

CAPACITIES AND DIMENSIONS

Name	Length in inches	Height in inches	Width in inches	Distance Centre to Centre of Tapping	Number Square Feet
Climax.....	36	11	4	7	13

Climax Indirect sections are connected together at top and bottom with either 2 inch Safford right and left screw nipples or 2 inch right and left hexagon nipples.
 For additional measurements, see page 178.

SAFFORD RADIATORS
CLIMAX INDIRECT RADIATORS
FOR STEAM OR WATER
DATA FOR CLIMAX RADIATORS

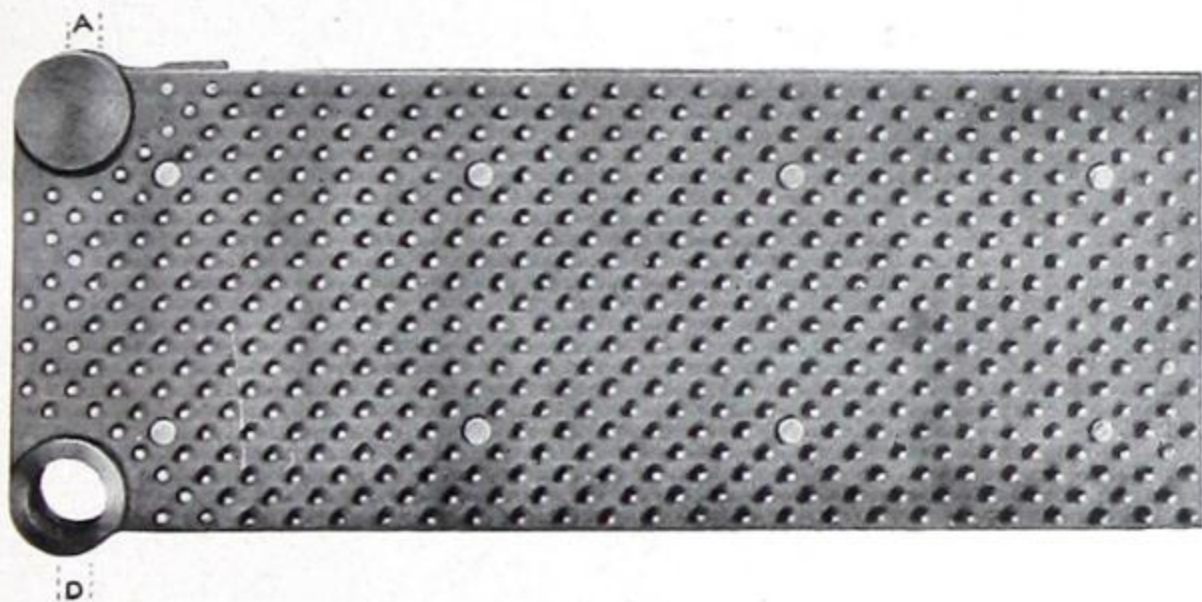
Sections in Stack	Sq. Feet of Heating Surface	Area Cold Air Supply Sq. Ins.	Area Hot Air Flue Sq. Ins.	Size for Brickwork Hot Air Flue, Ins.	Size Register Inches	Ratio 1 to 30	Ratio 1 to 35	Ratio 1 to 40
2	26	54	72	8x 8	9x12	780	910	1,040
3	39	72	96	8x12	10x14	1,170	1,365	1,560
4	52	90	120	8x12	12x15	1,560	1,820	2,080
5	65	108	144	12x12	12x19	1,950	2,275	2,600
6	78	126	168	12x12	14x22	2,340	2,730	3,120
7	91	144	192	12x16	14x24	2,730	3,185	3,640
8	104	162	226	12x16	16x20	3,120	3,640	4,160
9	117	180	240	12x20	16x24	3,510	4,095	4,680
10	130	198	264	12x20	20x20	3,900	4,550	5,200
11	143	216	288	12x24	20x24	4,290	5,005	5,720
12	156	234	312	12x24	20x24	4,680	5,460	6,240

Note:—Sections will be shipped separately unless orders specify that they are required assembled in stacks.

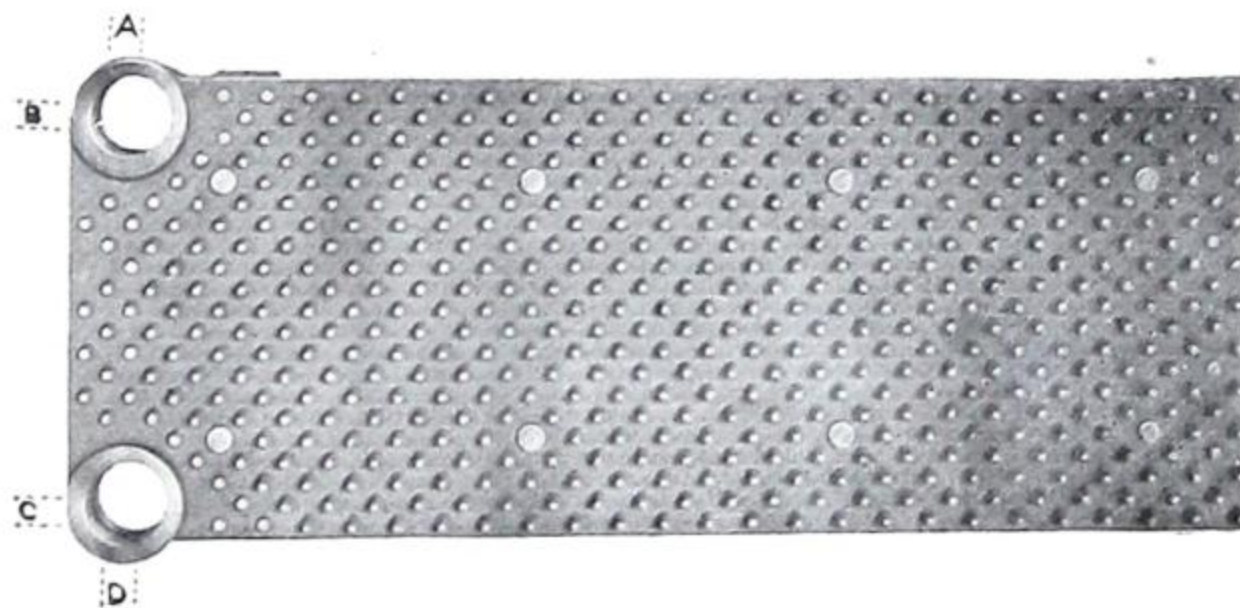
SAFFORD RADIATORS

SANITARY SCHOOL PIN INDIRECT RADIATORS

FOR STEAM OR WATER



STEAM SECTION



WATER SECTION

SAFFORD RADIATORS**SANITARY SCHOOL PIN INDIRECT RADIATORS****FOR STEAM OR WATER****CAPACITIES AND DIMENSIONS**

Name	Length in Inches	Height in Inches	Height of Connecting Points	Width Occupied in Stack	Distance Centre to Centre Opening	Square Feet
School Pin.....	36	$13\frac{7}{8}$	15	$3\frac{3}{4}$	$11\frac{3}{8}$	20
" "	$34\frac{3}{4}$	$11\frac{1}{2}$	$13\frac{3}{4}$	$2\frac{7}{8}$	$10\frac{1}{8}$	15

School Pin Indirect sections (20 square foot sections) are connected with 2 inch right and left hexagon nipples.

School Pin Indirect sections (15 square foot sections) are connected with 2 inch Safford right and left screw nipples only.

When tappings are at A, B, C or D, add $\frac{1}{4}$ inch to height or length of section to allow for hub.

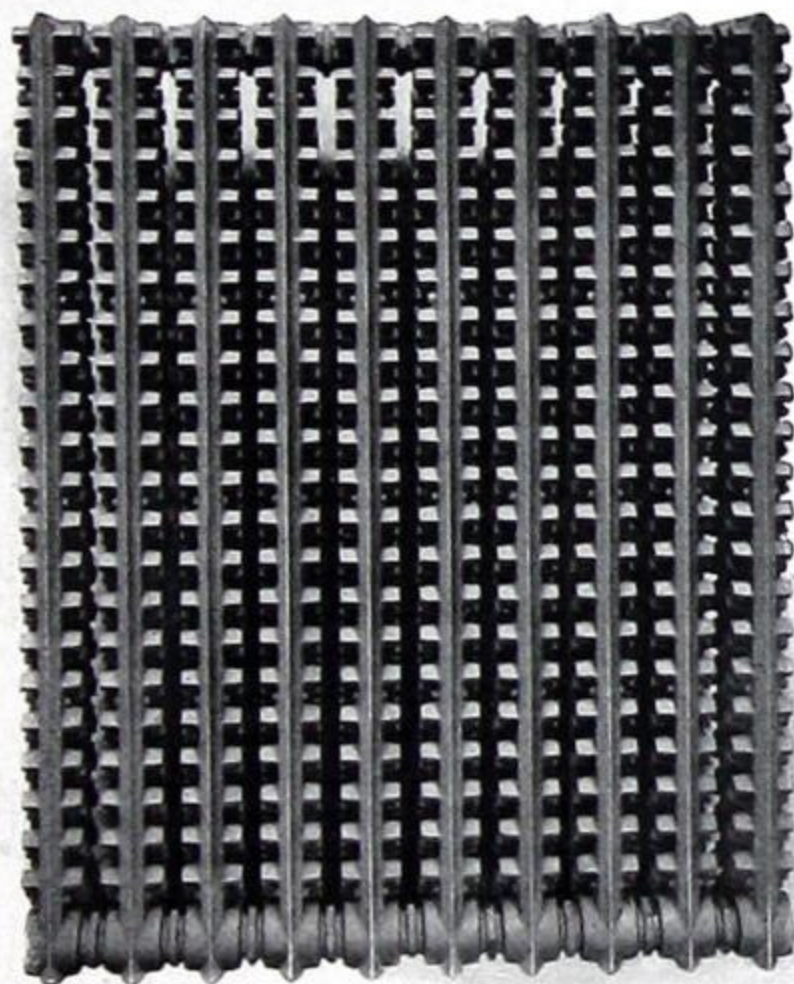
Sections will be shipped separately, unless orders specify that they are required assembled in stacks. When ordered assembled, they will be shipped in stacks of not more than six sections each.

Note:—We can also supply Gold Pin Indirect Radiators containing 10 square feet of heating surface per section. Length 36 inches, height $7\frac{1}{2}$ inches, height at connecting point 11 inches, width each section occupies in stack $2\frac{3}{4}$ inches, distance between centres of openings six inches.

SAFFORD RADIATORS

CAST IRON HOT-BLAST VENTILATING RADIATORS

FOR STEAM OR WATER



Front View of Ten-Section Group

FOR FAN AND BLOWER WORK



Showing a Section cut through centre

SAFFORD RADIATORS

CAST IRON HOT-BLAST VENTILATING RADIATORS

REGULAR SECTION—RATINGS AND FREE AREAS

30" Section (Steam only)—8 sq. ft. Height, 29 $\frac{7}{8}$ ". Width, 9 $\frac{1}{8}$ "

No. of Sections in Stack	Sq. ft. of Heating Surface	5 $\frac{3}{8}$ " Centres of Sections		5" Centres of Sections		4 $\frac{5}{8}$ " Centres of Sections		4" Centres of Sections	
		52% of Face		Stand, 44% of Face		37% of Face		24% of Face	
		Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	Width of Stack in Ins.
10	80	5.42	54	4.60	50	3.90	46	2.25	40
11	88	5.96	59	5.06	55	4.29	51	2.81	44
12	96	6.50	65	5.52	60	4.68	55	3.06	48
13	104	7.04	70	5.98	65	5.07	60	3.32	52
14	112	7.57	75	6.44	70	5.46	65	3.57	56
15	120	8.11	81	6.90	75	5.85	69	3.83	60
16	128	8.65	86	7.36	80	6.24	74	4.08	64
17	136	9.19	91	7.82	85	6.63	79	4.34	68
18	144	9.73	97	8.28	90	7.02	83	4.59	72
19	152	10.27	102	8.75	95	7.41	88	4.85	76
20	160	10.81	108	9.21	100	7.80	92	5.11	80
21	168	11.35	113	9.67	105	8.19	97	5.36	84
22	176	11.89	118	10.13	110	8.58	102	5.62	88
23	184	12.42	124	10.59	115	8.97	106	5.87	92
24	192	12.96	129	11.05	120	9.36	111	6.13	96

REGULAR SECTION—RATINGS AND FREE AREAS

40" Section (Steam or Water)—10.75 sq. ft. Height, 40 $\frac{1}{8}$ ". Width, 9 $\frac{1}{8}$ ".

No. of Sections in Stack	Sq. ft. of Heating Surface	5 $\frac{3}{8}$ " Centres of Sections		5" Centres of Sections		4 $\frac{5}{8}$ " Centres of Sections		4" Centres of Sections	
		52% of Face		Stand, 44% of Face		37% of Face		24% of Face	
		Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	Width of Stack in Ins.
10	107.50	7.29	54	6.20	50	5.25	46	3.50	40
11	118.25	8.02	59	6.82	55	5.77	51	3.85	44
12	129.00	8.74	65	7.44	60	6.30	55	4.20	48
13	139.75	9.47	70	8.06	65	6.82	60	4.55	52
14	150.50	10.19	75	8.68	70	7.35	65	4.90	56
15	161.25	10.91	81	9.30	75	7.87	69	5.25	60
16	172.00	11.64	86	9.92	80	8.40	74	5.60	64
17	182.75	12.36	91	10.54	85	8.92	79	5.95	68
18	193.50	13.09	97	11.16	90	9.45	83	6.30	72
19	204.25	13.82	102	11.78	95	9.97	88	6.65	76
20	215.00	14.54	108	12.40	100	10.50	92	7.00	80
21	225.75	15.26	113	13.02	105	11.02	97	7.35	84
22	236.50	15.98	118	13.64	110	11.55	102	7.70	88
23	247.25	16.71	124	14.26	115	12.07	106	8.05	92
24	258.00	17.43	129	14.88	120	12.60	111	8.40	96

SAFFORD RADIATORS

CAST IRON HOT-BLAST VENTILATING RADIATORS

REGULAR SECTION—RATINGS AND FREE AREAS

50" Section (Steam or Water)—13.5 sq. ft. Height, 50 $\frac{1}{8}$ ".
Width, 9 $\frac{1}{8}$ ".

No. of Sections in Stack	Sq. ft. of Heating Surface	5 $\frac{3}{8}$ " Centres of Sections		5" Centres of Sections		4 $\frac{5}{8}$ " Centres of Sections		4" Centres of Sections	
		52% of Face		Stand, 44% of Face		37% of Face		24% of Face	
		Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.
10	135.0	9.05	54	7.68	50	6.50	46	50-inch Sections can be assembled on 4-inch centers (See "Engineers' Data on Vento Heaters.")	
11	148.5	9.95	59	8.45	55	7.15	51		
12	162.0	10.85	65	9.22	60	7.80	55		
13	175.5	11.75	70	9.99	65	8.45	60		
14	189.0	12.65	75	10.76	70	9.10	65		
15	202.5	13.55	81	11.53	75	9.75	69		
16	216.0	14.45	86	12.30	80	10.40	74		
17	229.5	15.35	91	13.07	85	11.05	79		
18	243.0	16.25	97	13.84	90	11.70	83		
19	256.5	17.15	102	14.59	95	12.35	88		
20	270.0	18.05	108	15.36	100	13.00	92		
21	283.5	18.95	113	16.13	105	13.65	97		
22	297.0	19.85	118	16.90	110	14.30	102		
23	310.5	20.75	124	17.67	115	14.95	106		
24	324.0	21.65	129	18.44	120	15.60	111		

REGULAR SECTION—RATINGS AND FREE AREAS

60" Section (Steam or Water)—16 sq. ft. Height, 60 $\frac{1}{8}$ ".
Width, 9 $\frac{1}{8}$ ".

No. of Sections in Stack	Sq. ft. of Heating Surface	5 $\frac{3}{8}$ " Centres of Sections		5" Centres of Sections		4 $\frac{5}{8}$ " Centres of Sections	
		52% of Face		Stand, 44% of Face		37% of Face	
		Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.	Net Air Space in Sq. Ft.	† Width of Stack in Ins.
10	160	10.85	54	9.21	50	7.81	46
11	176	11.93	59	10.13	55	8.59	51
12	192	13.00	65	11.05	60	9.37	55
13	208	14.08	70	11.97	65	10.15	60
14	224	15.15	75	12.89	70	10.93	65
15	240	16.23	81	13.81	75	11.71	69
16	256	17.31	86	14.73	80	12.49	74
17	272	18.39	91	15.65	85	13.27	79
18	288	19.46	97	16.57	90	14.05	83
19	304	20.54	102	17.50	95	14.83	88
20	320	21.62	108	18.42	100	15.61	92
21	336	22.70	113	19.34	105	16.39	97
22	352	23.78	118	20.26	110	17.17	102
23	368	24.85	124	21.18	115	17.95	106
24	384	25.93	129	22.10	120	18.73	111

SAFFORD RADIATORS

CAST IRON HOT-BLAST VENTILATING RADIATORS

REGULAR SECTION—RATINGS AND FREE AREAS

72" Section (Steam or Water)—19 sq. ft. Height, $72\frac{3}{32}$ "
Width, $9\frac{1}{8}$ ".

No. of Sections in Stack	Sq. Ft. of Heating Surface	$5\frac{3}{8}$ " Cent. of Sec's		5" Cent. of Sec's		$4\frac{5}{8}$ " Cent. of Sec's	
		52% of Face		Stand. 44% of Face		37% of Face	
		Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.
10	190	13.03	54	11.04	50	9.37	46
11	209	14.31	59	12.17	55	10.30	51
12	228	15.60	65	13.27	60	11.25	55
13	247	16.90	70	14.35	65	12.18	60
14	266	18.19	75	15.46	70	13.11	65
15	285	19.49	81	16.58	75	14.06	69
16	304	20.78	86	17.70	80	14.99	74
17	323	22.07	91	18.78	85	15.92	79
18	342	23.34	97	19.88	90	16.86	83
19	361	24.64	102	21.00	95	17.80	88
20	380	25.95	108	22.10	100	18.73	92
21	399	27.25	113	23.20	105	19.67	97
22	418	28.52	118	24.31	110	20.60	102
23	437	29.80	124	25.40	115	21.54	106
24	456	31.10	129	26.50	120	22.47	111

NARROW SECTION—RATINGS AND FREE AREAS

Narrow 40" Section—7.5 sq. ft. Height, $41\frac{1}{64}$ ". Width, $6\frac{3}{4}$ ".

No. of Sections in Stack	Sq. Ft. of Heating Surface	$5\frac{3}{8}$ " Cent. of Sec's		5" Cent. of Sec's		$4\frac{5}{8}$ " Cent. of Sec's	
		52% of Face		Stand. 44% of Face		37% of Face	
		Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.
10	75.0	6.20	52	7.29	56	5.25	48
11	82.5	6.82	57	8.02	61	5.77	53
12	90.0	7.44	62	8.74	67	6.30	57
13	97.5	8.06	67	9.47	72	6.82	62
14	105.0	8.68	72	10.19	77	7.35	67
15	112.5	9.30	77	10.91	83	7.87	71
16	120.0	9.92	82	11.64	88	8.40	76
17	127.5	10.54	87	12.36	93	8.92	81
18	135.0	11.16	92	13.09	99	9.45	85
19	142.5	11.78	97	13.82	104	9.97	90
20	150.0	12.40	102	14.54	110	10.50	94
21	157.5	13.02	107	15.26	115	11.02	99
22	165.0	13.64	112	15.98	120	11.55	104
23	172.5	14.26	117	16.71	126	12.07	108
24	180.0	14.88	122	17.43	131	12.60	113

SAFFORD RADIATORS**CAST IRON HOT-BLAST VENTILATING RADIATORS****NARROW SECTION—RATINGS AND FREE AREAS****Narrow 50" Section—9.5 sq. ft. Height, 50 $\frac{3}{4}$ ". Width, 6 $\frac{3}{4}$ "**

No. of Loops in Stack	Sq. Ft. of Heat- ing Sur- face	5" Centres of Loops		5 $\frac{3}{8}$ " Centres of Loops		4 $\frac{5}{8}$ " Centres. of Loops	
		St'nd.44% of Face		52% of Face		37% of Face	
		Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.
10	95.0	7.68	52	9.05	56	6.50	48
11	104.5	8.45	57	9.95	61	7.15	53
12	114.0	9.22	62	10.85	67	7.80	57
13	123.5	9.99	67	11.75	72	8.45	62
14	133.0	10.76	72	12.65	77	9.10	67
15	142.5	11.53	77	13.55	83	9.75	71
16	152.0	12.30	82	14.45	88	10.40	76
17	161.5	13.07	87	15.35	93	11.05	81
18	171.0	13.84	92	16.25	99	11.70	85
19	180.5	14.59	97	17.15	104	12.35	90
20	190.0	15.36	102	18.05	110	13.00	94
21	199.5	16.13	107	18.95	115	13.65	99
22	209.0	16.90	112	19.85	120	14.30	104
23	218.5	17.67	117	20.75	126	14.95	108
24	228.0	18.44	122	21.65	131	15.60	113

NARROW SECTION—RATINGS AND FREE AREAS**Narrow 60" Section—11 sq. ft. Height, 60 $\frac{1}{8}$ ". Width, 6 $\frac{3}{4}$ "**

No. of Loops in Stack	Sq. Ft. of Heat- ing Sur- face	5" Centres of Loops		5 $\frac{3}{8}$ " Centres of Loops		4 $\frac{5}{8}$ " Centres of Loops	
		St'nd.44% of Face		52% of Face		37% of Face	
		Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.	Net Air Space in Sq. Ft.	†Width of Stack in Ins.
10	110.0	9.21	52	10.85	56	7.81	48
11	121.0	10.13	57	11.93	61	8.59	53
12	132.0	11.05	62	13.00	67	9.37	57
13	143.0	11.97	67	14.08	72	10.15	62
14	154.0	12.89	72	15.15	77	10.93	67
15	165.0	13.81	77	16.23	83	11.71	71
16	176.0	14.73	82	17.31	88	12.49	76
17	187.0	15.65	87	18.39	93	13.27	81
18	198.0	16.57	92	19.46	99	14.05	85
19	209.0	17.50	97	20.54	104	14.83	90
20	220.0	18.42	102	21.62	110	15.61	94
21	231.0	19.34	107	22.70	115	16.30	99
22	242.0	20.26	112	23.78	120	17.17	104
23	253.0	21.18	117	24.85	126	17.95	108
24	264.0	22.10	122	25.93	131	18.73	113

Approx. weights—Actual, 8.2 lbs. per sq. ft. Shipping, 9 lbs. per sq. ft.†NOTE—Add to the width of stack 2 $\frac{1}{2}$ inches for staggering of stacks—except 4-inch centres not staggered.

SAFFORD RADIATORS**LOW-DRIP LEG
CONNECTION****FOR
STEAM**

All Safford Steam Radiators are equipped with low-drip legs unless otherwise ordered; the centre of the 2" opening is thus $\frac{1}{2}$ " lower than the centre of the 2" nipple connection between the sections and it follows that no matter what size bushing is used Safford Steam Radiators are always tapped eccentric, thus ensuring the complete draining off of the water of condensation from Safford Steam Radiators.

SAFFORD RADIATORS

SPECIAL RADIATORS

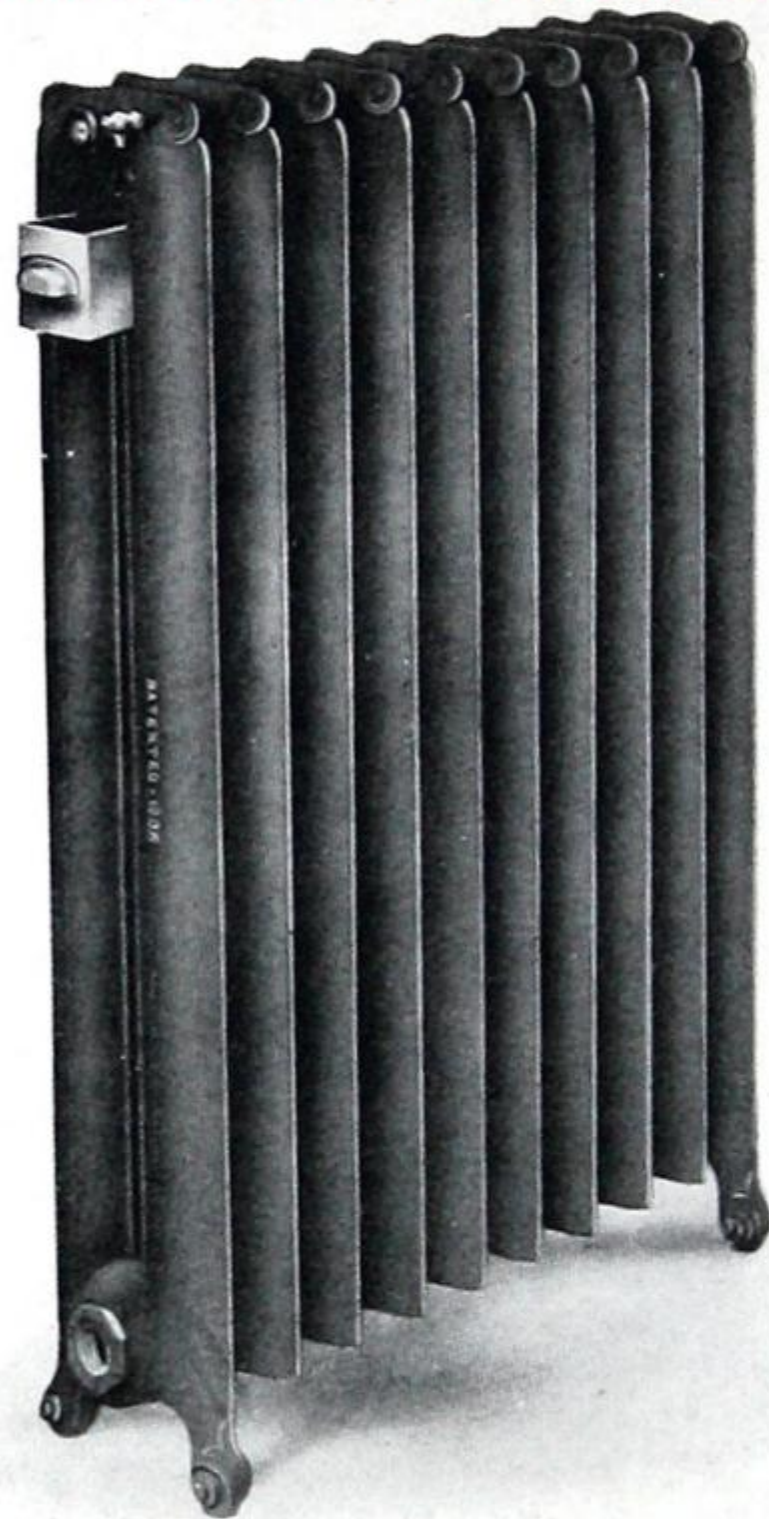
EMPRESS HUMIDIFYING TWO-COLUMN RADIATOR

QUEEN FOUR-COLUMN STEAMSHIP RADIATOR

DINING ROOM FOUR-COLUMN RADIATOR

LONG LEG RADIATORS

LEGLESS RADIATORS

SAFFORD RADIATORS**EMPRESS
HUMIDIFYING****TWO-COLUMN RADIATORS****SPECIAL RADIATORS****FOR
STEAM OR
WATER**

SAFFORD RADIATORS

SPECIAL RADIATORS FOR STEAM OR WATER

EMPRESS HUMIDIFYING TWO-COLUMN RADIATORS

This new Humidifying Radiator is a decided innovation and we feel sure will commend itself to all heating engineers. The highly nickel plated copper water pan is placed inside the radiator in such a position as to render it almost invisible, and at the same time to permit of the highest possible vaporization of the water.

The desirability of imparting moisture to the atmosphere of rooms heated by either steam or water, will appeal especially to those who desire perfect hygienic conditions, and the added efficiency of the radiating surface consequent upon the increased humidity makes this radiator a most valuable addition to the "Safford" line.

Made in SAXON, VICTORIA and REGINA two-column patterns.

For Capacities and Dimensions see Schedules pertaining to SAXON, VICTORIA and REGINA Radiators.

SAFFORD RADIATORS**SPECIAL RADIATORS****QUEEN****FOUR-COLUMN STEAMSHIP RADIATOR—
PLAIN OR ORNAMENTAL**

This single section radiator has been specially designed for use in cabins of steamships.

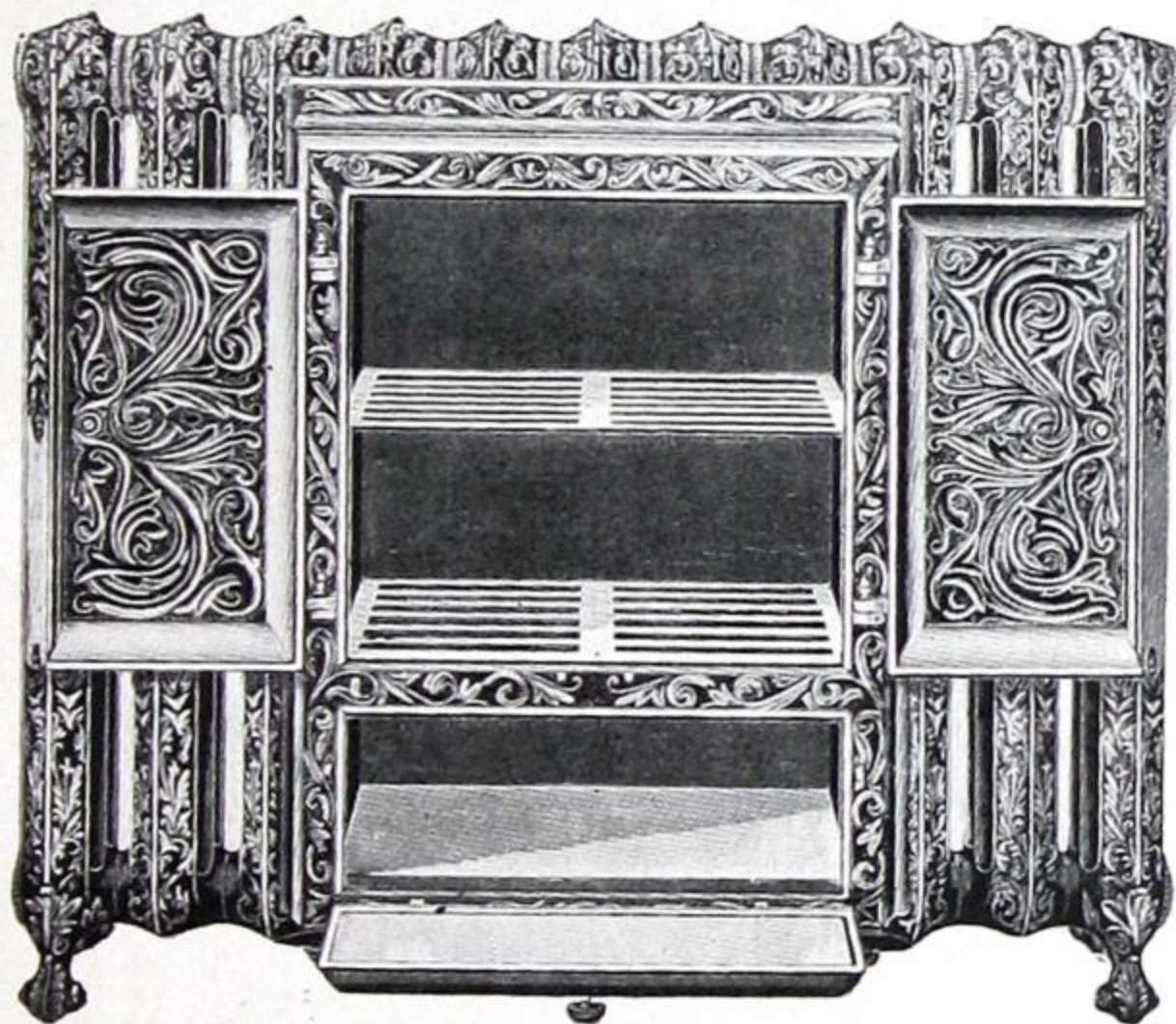
Made in 16, 20, 26, 32 inch Favorite plain and ornamental patterns.

FOR STEAM OR WATER**CAPACITIES AND DIMENSIONS**

No.	Height Inches	Square Feet	Tappings Inches	Width Inches	Depth Inches
1	16	$2\frac{3}{4}$	$\frac{1}{2}$	$8\frac{1}{2}$	4
1A	$14\frac{1}{2}$	$2\frac{3}{4}$	"	"	"
2	$20\frac{1}{2}$	$4\frac{1}{4}$	"	"	"
2A	19	$4\frac{1}{4}$	"	"	"
3	$26\frac{1}{2}$	$5\frac{3}{4}$	"	"	"
4	$32\frac{1}{2}$	7	"	"	"



Nos. 1, 2, 3, 4 have connections at sides as shown above. Nos. 1A, 2A have connections on bottom of feet.

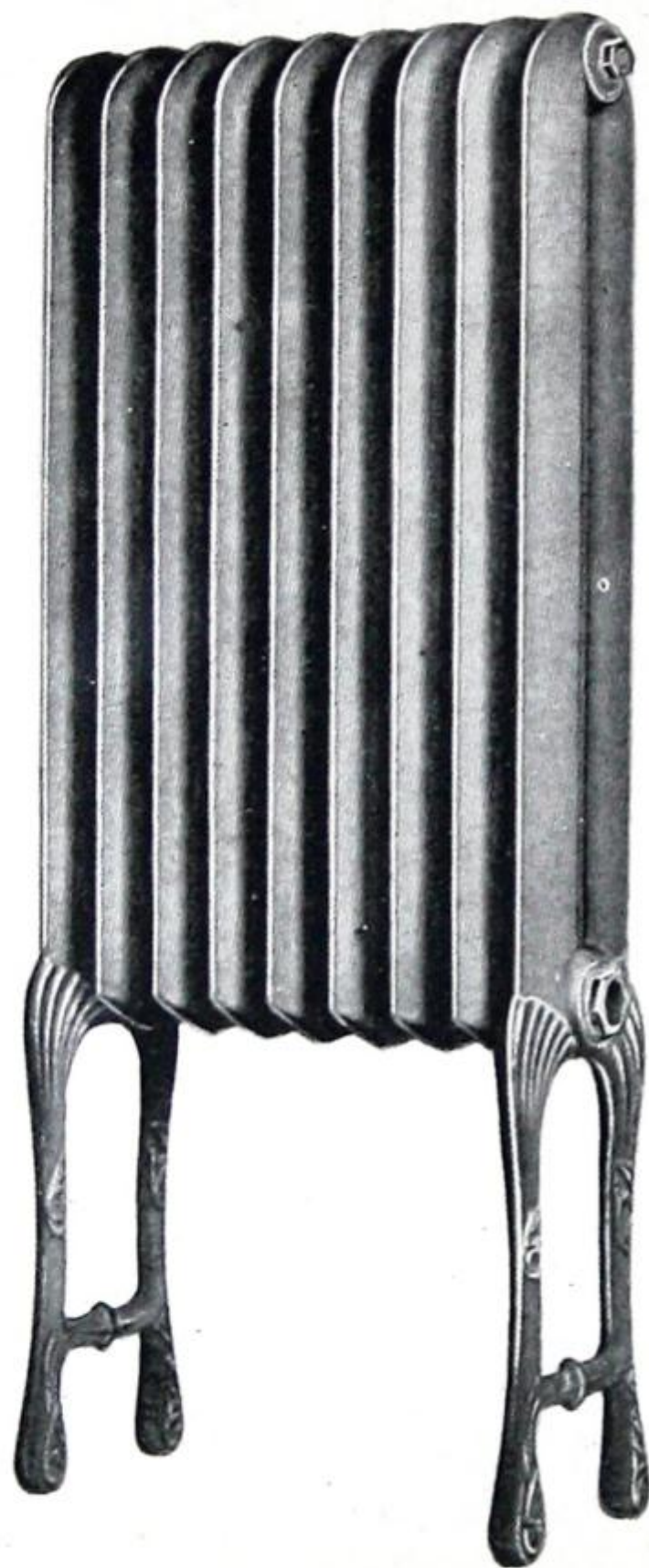
SAFFORD RADIATORS**SPECIAL RADIATORS****DINING-ROOM****FOUR-COLUMN RADIATORS****FOR STEAM OR WATER**

Ovens are 21 inches long by 12 inches wide.
Made only in the four column 38½ inch Daisy ornamental pattern.

SIZES AND LIST PRICES

Size	No. of Loops in Radiator (Exclusive of Oven)	Sq. Ft. of Heating Surface	Equiva- lent 1" Pipe	Extreme Length Inches
A A	2	21	63	28
A	4	37	111	36
B	6	53	159	44
C	8	69	207	52
D	10	85	255	60
E	12	101	303	68
F	14	117	351	76

Size	Price Without Top	Price With Plain Top	Price With Plated Top
A A	\$48.31	\$50.25	\$52.35
A	53.83	55.50	58.20
B	60.61	63.00	66.30
C	68.14	70.50	74.40
D	74.25	78.00	82.50
E	80.95	85.50	90.00
F	87.73	93.00	98.70



SAFFORD RADIATORS

SPECIAL RADIATORS FOR STEAM OR WATER

LONG OR STORK LEG RADIATORS

	Per Leg Section
High Legs, 4 to 6 inches high, add.....	\$0.30
High Legs, up to 9 inches high, add.....	.60
High Legs, up to 15 inches high, add.....	1.20
High Legs, 16 inches (and over) high, add.....	2.00

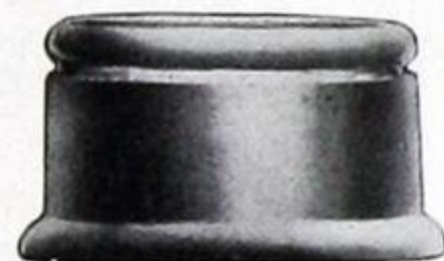
Stork or long legs may be supplied on any of the direct radiators shown in this catalogue. The height of legs is stated as the height from the floor to the centre of tapping. These legs are made in any height from 4 inches up to the stork leg which is 18 inches from the floor to centre of tapping. Legs higher than 18 inches are made to special order only.

SAFFORD RADIATORS
SPECIAL RADIATORS FOR STEAM OR WATER
LONG OR STORK LEG RADIATORS

Can also be made by using Jennison Adjustable Foot Rests or Safford Radiator Pedestals.

JENNISON ADJUSTABLE FOOT REST

This Foot Rest consists of two iron blocks that open by simply turning the top piece, which is so cast that any radiator foot will fit securely. A substantial screw holds the two pieces and allows the proper adjustment to be easily made.



Plain Iron, packed 48 in a box

No.	Closed	Open	Price
1	$\frac{7}{8}$	$1\frac{1}{4}$	\$0.20
2	$1\frac{1}{4}$	$1\frac{3}{4}$	.25
3	$1\frac{3}{8}$	$2\frac{1}{4}$	.30

SAFFORD RADIATOR PEDESTALS

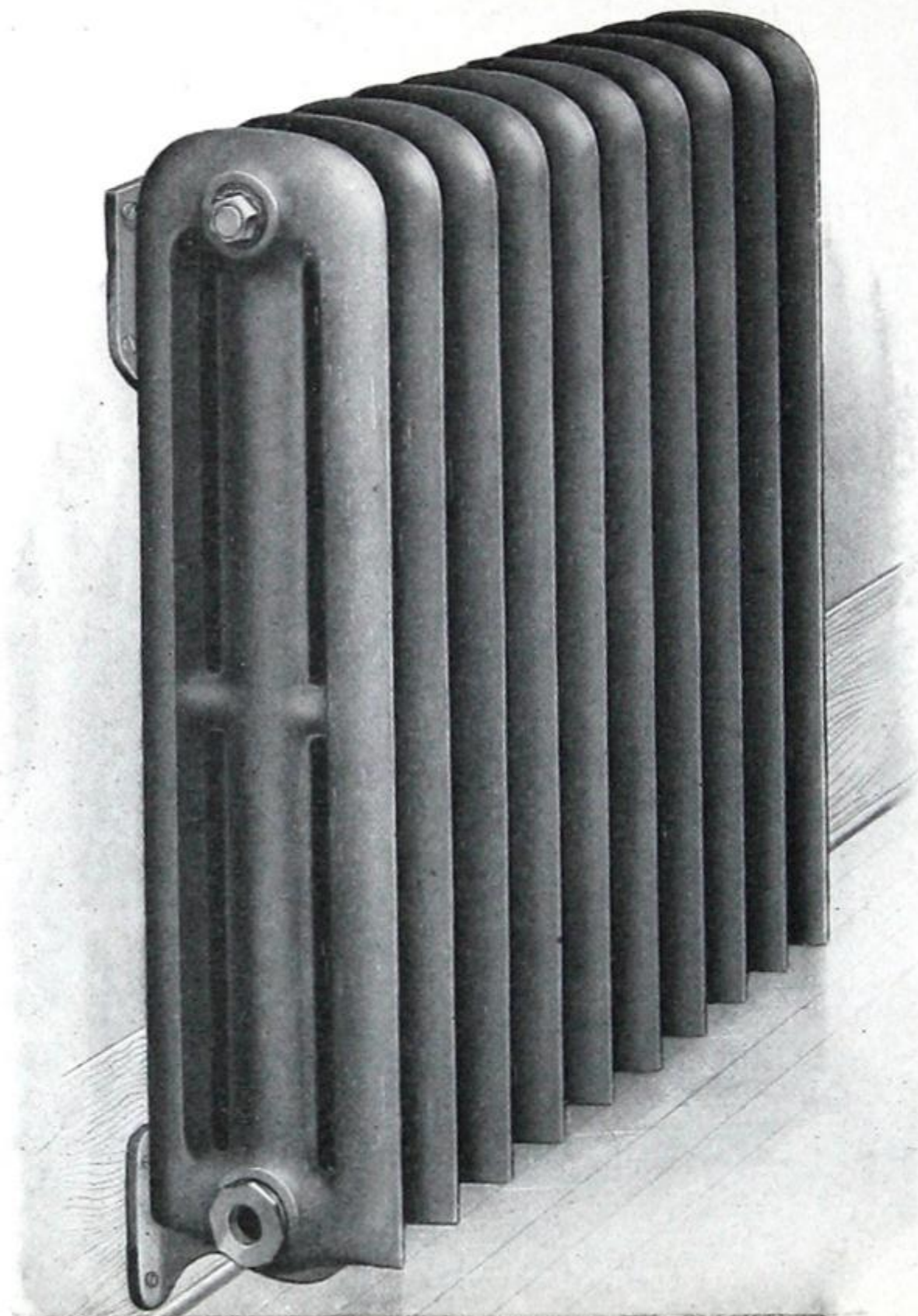


As shown in illustration, are made in varying heights and are designed to fit under the legs of all styles and heights of any of our radiators.

Height, inches.....	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5
List Price.....	.10	.10	.14	.20	.20	.24	.24	.30	.30	.35

SAFFORD RADIATORS**SAXON, VICTORIA
REGINA****LEGLESS RADIATORS**

Made in

**ONE, TWO, THREE and
FOUR-COLUMN****SPECIAL RADIATORS
FOR
STEAM OR WATER**

The illustration shows
Saxon Three-Column
Radiator hanging on
Concealed Brackets.

SAFFORD RADIATORS**CONCEALED BRACKETS****FOR****ONE, TWO, THREE, FOUR-COLUMN LEGLESS RADIATORS****Saxon - Victoria - Regina**

The type of radiator shown on the opposite page is very desirable for use in corridors or rooms where floor space is limited, or in basements where it is advantageous to hang the radiators on the walls above the water line in the boiler.

For supporting Single-Column, Two-Column, Three-Column and Four-Column Direct Radiators of patterns made by us. Distance from wall to centre of tapping in Radiator is—in the Single-Column, $3\frac{1}{4}$ inches; Two-Column, $4\frac{5}{8}$ inches; Three-Column, $5\frac{3}{4}$ inches; Four-Column, $6\frac{1}{2}$ inches. A set consists of one each, top and bottom support. Ordinarily two sets will support a medium size of Radiator.

LIST PRICES

No. of Columns	1	2	3	4
Top.....	15c.	30c.	35c.	40c.
Bottom.....	20c.	35c.	40c.	50c.

**Top Bracket****Bottom Bracket**

SAFFORD RADIATORS

**SPECIAL RADIATORS
FOR STEAM OR WATER**

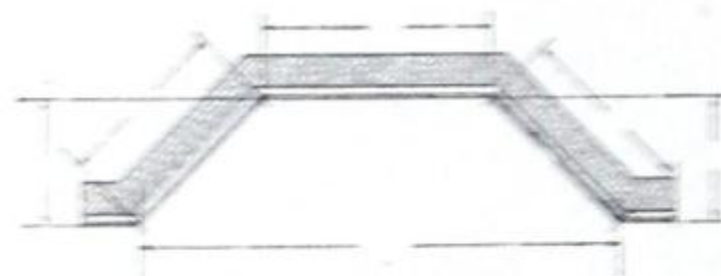
ONE, TWO, THREE, FOUR-COLUMN RADIATORS

Angle • Curved • Circular

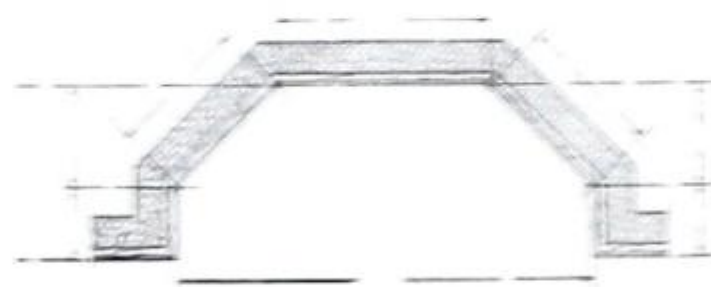
Measurements required for Angle, Curved and Circular Radiators.



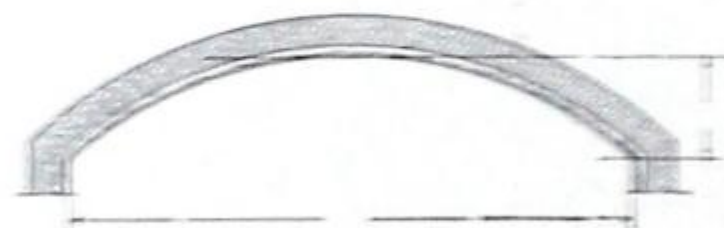
One Angle



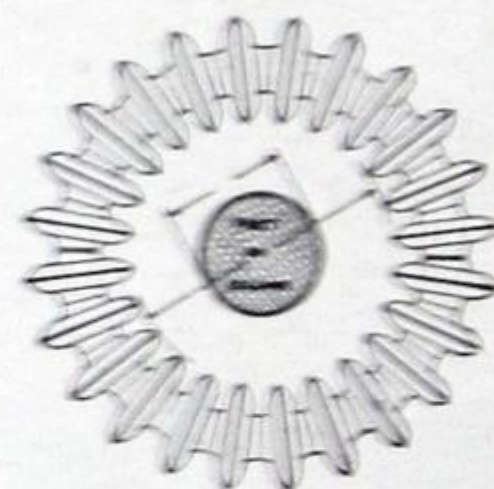
Two Angles



Three or More Angles



Curved



Circular

SAFFORD RADIATORS

SPECIAL RADIATORS FOR STEAM OR WATER

ONE, TWO, THREE, FOUR, FIVE AND SIX-COLUMN RADIATORS

The sketches on the opposite page indicate the measurements which are required in order to secure angle and curved Radiators which will correctly fit the peculiar shape of the walls of rooms for which they are intended.

It is, of course, desirable that a wooden or heavy paper template should accompany orders, but if this is not convenient, the measurements along dimension lines shown, if accurately stated, will insure correct filling of orders. In furnishing sketches please state whether measurements have been taken from the plastered wall, or whether allowance has been made for baseboard and shoe. Sketches should show distinctly on which end the supply leg is to be placed. State whether single or twin connection tappings are desired.

SPECIAL NOTE—In ordering state whether templates are to be completely filled up with sections or otherwise. Show extreme points between which Radiator may be placed.

SAFFORD RADIATORS**TAPPINGS FOR RADIATORS****Standard Tappings—Steam Radiators**

All Safford Steam Radiators will be tapped as per schedule below. If any special tapplings are desired they should be plainly stated on orders.

One Pipe Steam Radiators, Direct and Direct-Indirect:—

25 square feet and under.....	1	inch.
Above 25 square feet but not exceeding 60 square feet.....	1 $\frac{1}{4}$	"
Above 60 square feet but not exceeding 100 square feet.....	1 $\frac{1}{2}$	"
Above 100 square feet.....	2	"

All one pipe steam connections are tapped left hand with eccentric tappings.

Two Pipe Steam Radiators, Direct and Direct-Indirect:—

50 square feet and under.....	1	x	$\frac{3}{4}$	inch
Above 50 square feet but not exceeding 95 square feet.....	1 $\frac{1}{4}$	x	1	"
Above 95 square feet.....	1 $\frac{1}{2}$	x	1 $\frac{1}{4}$	"

All two pipe steam connections are tapped right hand. The tapping on return end of radiator being made eccentric.

Two Pipe Steam Radiators, Indirect only:—

40 square feet and under.....	1	x	$\frac{3}{4}$	inch
Above 40 square feet but not exceeding 80 square feet.....	1 $\frac{1}{4}$	x	1	"
Above 80 square feet but not exceeding 120 square feet.....	1 $\frac{1}{2}$	x	1 $\frac{1}{4}$	"
Above 120 square feet.....	2	x	1 $\frac{1}{2}$	"

Steam Indirect Radiators are always tapped for two pipe system.

All radiators shipped from Winnipeg Branch are tapped right hand unless otherwise ordered.

Note.—When using union valves or union elbows please state this fact in ordering so that connections may be tapped right hand.

SAFFORD RADIATORS

TAPPINGS FOR RADIATORS

Standard Tappings—Water Radiators

All Safford Water Radiators will be tapped as per schedule below. If any special tappings are desired they should be plainly stated on orders.

Water Radiators, Single or Twin Connections, all Patterns:—

50 square feet and under.....	1	x1	inch
Above 50 square feet but not exceeding 100 square feet	1 1/4	x1 1/4	"
Above 100 square feet	1 1/2	x1 1/2	"

All Twin Connection Radiators are tapped left hand. All Single Connection or opposite end tappings will be made with right hand threads. All Water Radiators are shipped twin connection tapped left hand unless otherwise specified on orders.

All Wall Radiators for hot water are tapped top and bottom same end left hand, and will be shipped accordingly unless otherwise specified on orders. Wall Radiator sections are tapped 1 1/2 inch left hand and are bushed to sizes required.

All radiators shipped from Winnipeg Branch are tapped right hand unless otherwise ordered.

Note.—When using union valves or union elbows please state this fact in ordering, so that connections may be tapped right hand.

Heat Generator

FIRST FLOOR—Up to 25 square feet	1/2	x	1/2	inch
From 25 square feet to 60 square feet	3/4	x	3/4	"
Over 60 square feet	1	x1		"
SECOND FLOOR—Up to 30 square feet.....	1/2	x	1/2	inch
From 30 square feet to 100 square feet.....	3/4	x	3/4	"
Over 100 square feet.....	1	x1		"
THIRD FLOOR—Up to 50 square feet	1/2	x	1/2	inch
From 50 square feet to 125 square feet	3/4	x	3/4	"
Over 125 square feet	1	x1		"

SAFFORD RADIATORS**TAPPINGS FOR RADIATORS****For Special Steam Systems****DUNHAM VACUO-VAPOR SYSTEM**

Radiator Tappings, Dunham Vapor and Vacuum systems using Hot Water radiation with top inlet and bottom outlet opposite end.

Square Feet Radiation	Inlet	Outlet
1 to 40.....	$\frac{1}{2}$ inch	$\frac{1}{2}$ inch
41 to 100.....	$\frac{3}{4}$ "	$\frac{1}{2}$ "
101 to 180.....	1 "	$\frac{1}{2}$ "
Tappings right or left as specified.		

DUNHAM VACUUM SYSTEM

Radiator Tappings, Dunham Vacuum System, using Steam Radiation, Bottom Connection, opposite ends.

Square Feet Radiation	Inlet	Outlet
1 to 25.....	$\frac{1}{2}$ inch	$\frac{1}{2}$ inch
26 to 80.....	$\frac{3}{4}$ "	$\frac{1}{2}$ "
81 to 150.....	1 "	$\frac{1}{2}$ "
151 to 250.....	$1\frac{1}{4}$ "	$\frac{1}{2}$ "
251 to 350.....	$1\frac{1}{2}$ "	$\frac{1}{2}$ "
Tappings right or left as specified.		

SAFFORD RADIATORS**TAPPINGS FOR RADIATORS****For Special Steam Systems****Webster Modulation System** (Hot Water Type Radiator only used)

Direct Radiators Supply End		Direct-Indirect Radiators Supply End	
Up to 50 sq. ft.....	$\frac{3}{4}$ "	Up to 16 sq. ft.....	$\frac{1}{2}$ "
Up to 100 sq. ft.....	1"	Up to 48 sq. ft.....	$\frac{3}{4}$ "
Up to 180 sq. ft.....	$1\frac{1}{4}$ "	Up to 75 sq. ft.....	1"
Up to 225 sq. ft.....	$1\frac{1}{2}$ "	Up to 144 sq. ft.....	$1\frac{1}{4}$ "
Returns		Up to 180 sq. ft.....	$1\frac{1}{2}$ "
Up to 100 sq. ft.....	$\frac{1}{2}$ "	Returns	
Up to 225 sq. ft.....	$\frac{3}{4}$ "	Up to 50 sq. ft.....	$\frac{1}{2}$ "
		Up to 100 sq. ft.....	$\frac{3}{4}$ "
		Up to 225 sq. ft.....	1"

All tappings are Right Hand. Flows at top and returns at bottom opposite end. Returns tapped eccentric. No air vent tapping.

Webster Vacuum System (Steam Type Radiators)

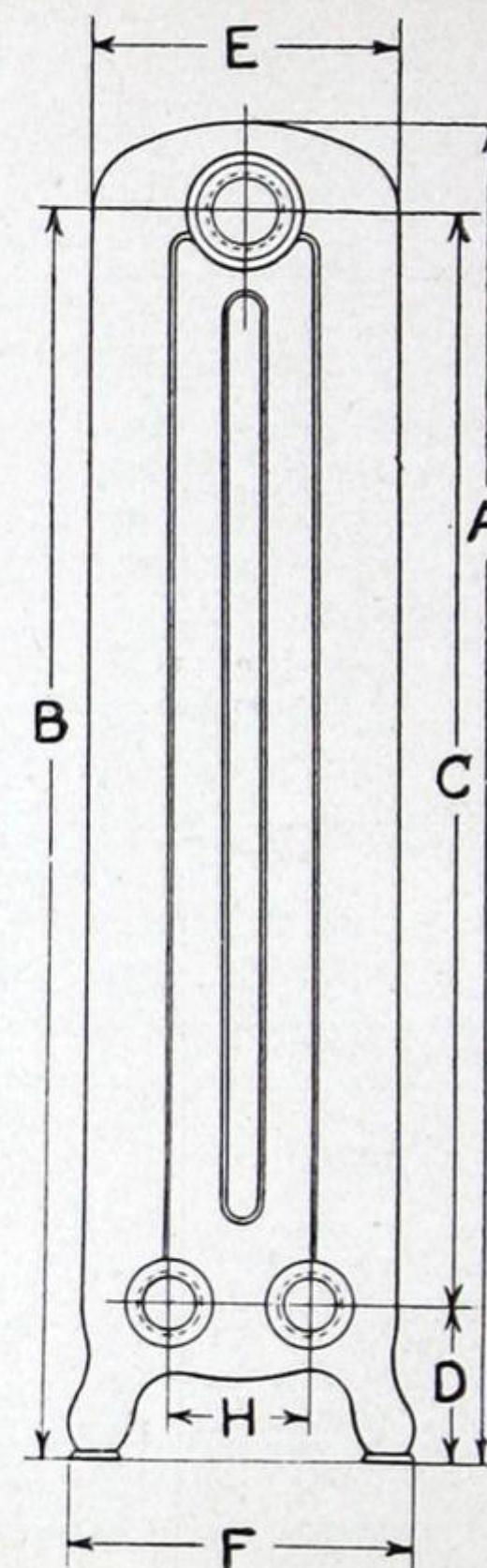
Heating Surface		Inlet	Outlet
35 sq. ft.....	and under.....	$\frac{1}{2}$ "	$\frac{1}{2}$ "
36 sq. ft.....	to 80 sq. ft.....	$\frac{3}{4}$ "	$\frac{1}{2}$ "
81 sq. ft.....	to 150 sq. ft.....	1"	$\frac{1}{2}$ "
151 sq. ft.....	to 300 sq. ft.....	$1\frac{1}{4}$ "	$\frac{3}{4}$ "
301 sq. ft.....	to 450 sq. ft.....	$1\frac{1}{2}$ "	$\frac{3}{4}$ "
451 sq. ft.....	to 600 sq. ft.....	2"	1"
601 sq. ft.....	to 1,200 sq. ft.....	$2\frac{1}{2}$ "	1"

All returns tapped Right Hand eccentric. No air vent tapping (if tapped to be plugged). Flows tapped right or left hand thread as specified.

SAFFORD RADIATORS

MEASUREMENTS OF RADIATORS

Name	Catalogue Height	A	B	C	D	E	F	G	H	I	Heating Surface Sq. Ft.
One Column SAXON VICTORIA and REGINA	38	$38\frac{5}{16}$	$36\frac{7}{16}$	$31\frac{15}{16}$	$4\frac{1}{2}$	$4\frac{3}{16}$	$5\frac{1}{4}$	$2\frac{1}{2}$	.....	4	3
	32	$32\frac{15}{32}$	$30\frac{1}{2}$	$25\frac{15}{16}$	$4\frac{1}{2}$	$4\frac{3}{16}$	$5\frac{1}{4}$	$2\frac{1}{2}$	.....	4	$2\frac{1}{2}$
	26	$26\frac{1}{2}$	$24\frac{9}{16}$	$20\frac{1}{16}$	$4\frac{1}{2}$	$4\frac{3}{16}$	$5\frac{1}{4}$	$2\frac{1}{2}$	.....	4	2
	23	$23\frac{1}{32}$	$21\frac{3}{32}$	$16\frac{19}{32}$	$4\frac{1}{2}$	$4\frac{3}{16}$	$5\frac{1}{4}$	$2\frac{1}{2}$	.....	4	$1\frac{2}{3}$
	20	$20\frac{3}{16}$	$18\frac{9}{32}$	$13\frac{49}{64}$	$4\frac{1}{2}$	$4\frac{3}{16}$	$5\frac{1}{4}$	$2\frac{1}{2}$	.....	4	$1\frac{1}{2}$
Two-Column SAXON VICTORIA and REGINA	45	$44\frac{15}{16}$	$43\frac{1}{32}$	$39\frac{3}{16}$	4	$7\frac{3}{8}$	$8\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{2}$	5
	38	$38\frac{13}{32}$	$36\frac{9}{16}$	$32\frac{5}{8}$	4	$7\frac{3}{8}$	$8\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{2}$	4
	32	$32\frac{15}{32}$	$30\frac{5}{8}$	$26\frac{5}{8}$	4	$7\frac{3}{8}$	$8\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{3}$
	30	$30\frac{1}{32}$	$28\frac{5}{32}$	$24\frac{7}{32}$	4	$7\frac{3}{8}$	$8\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{2}$	3
	26	$26\frac{9}{16}$	$24\frac{21}{32}$	$20\frac{43}{64}$	4	$7\frac{3}{8}$	$8\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{2}$	$2\frac{2}{3}$
	23	$23\frac{1}{32}$	$21\frac{1}{32}$	$17\frac{19}{64}$	4	$7\frac{3}{8}$	$8\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{2}$	$2\frac{1}{3}$
Three-Column SAXON VICTORIA and REGINA	20	$20\frac{3}{32}$	$18\frac{5}{32}$	$14\frac{15}{64}$	4	$7\frac{3}{8}$	$8\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{1}{2}$	2
	44	$43\frac{13}{16}$	$41\frac{1}{8}$	$36\frac{23}{32}$	$4\frac{1}{2}$	9	$9\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	4	6
	38	$38\frac{13}{32}$	$35\frac{11}{16}$	$31\frac{1}{4}$	$4\frac{1}{2}$	9	$9\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	4	5
	32	$32\frac{15}{32}$	$29\frac{27}{32}$	$25\frac{7}{16}$	$4\frac{1}{2}$	9	$9\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	4	$4\frac{1}{2}$
	26	$26\frac{11}{16}$	$23\frac{15}{16}$	$19\frac{9}{16}$	$4\frac{1}{2}$	9	$9\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	4	$3\frac{3}{4}$
	22	$22\frac{19}{32}$	$19\frac{7}{8}$	$15\frac{17}{32}$	$4\frac{1}{2}$	9	$9\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	4	3
Four-Column SAXON VICTORIA and REGINA	18	$18\frac{21}{32}$	$15\frac{29}{32}$	$11\frac{1}{2}$	$4\frac{1}{2}$	9	$9\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	4	$2\frac{1}{4}$
	45	46	$43\frac{13}{16}$	$39\frac{5}{16}$	$4\frac{1}{2}$	$11\frac{1}{2}$	$11\frac{3}{4}$	3	$3\frac{1}{4}$	4	10
	38	$38\frac{1}{2}$	$36\frac{1}{2}$	32	$4\frac{1}{2}$	$11\frac{1}{2}$	$11\frac{3}{4}$	3	$3\frac{1}{4}$	4	8
	32	$32\frac{1}{2}$	$30\frac{1}{2}$	26	$4\frac{1}{2}$	$11\frac{1}{2}$	$11\frac{3}{4}$	3	$3\frac{1}{4}$	4	$6\frac{1}{2}$
	26	$26\frac{1}{2}$	$24\frac{1}{2}$	20	$4\frac{1}{2}$	$11\frac{1}{2}$	$11\frac{3}{4}$	3	$3\frac{1}{4}$	4	5
	22	$22\frac{1}{2}$	$20\frac{1}{2}$	16	$4\frac{1}{2}$	$11\frac{1}{2}$	$11\frac{3}{4}$	3	$3\frac{1}{4}$	4	4
	20	$20\frac{1}{2}$	$18\frac{1}{2}$	14	$4\frac{1}{2}$	$11\frac{1}{2}$	$11\frac{3}{4}$	3	$3\frac{1}{4}$	4	$3\frac{1}{2}$
	18	$18\frac{1}{2}$	$16\frac{1}{2}$	12	$4\frac{1}{2}$	$11\frac{1}{2}$	$11\frac{3}{4}$	3	$3\frac{1}{4}$	4	3



SAFFORD RADIATORS

INFORMATION REQUIRED FOR ORDERING RADIATORS AND RADIATOR REPAIRS

State plainly the Catalogue name. Especially mention the height of radiator required and where steam state whether it is one pipe or two pipe, plain or ornamental, round or square top, standard or long legs, and where for a vacuum system, state plainly whether the tappings are right or left and the sizes thereof.

When ordering radiator leg sections, give full particulars as to Catalogue name, whether plain or ornamental, square or round top, height whether for feed or return end, one pipe or two pipe steam, where tapping is to be located, whether same is right and left, and the size of it. Also the size of the inside connection of the section and whether it is right or left. State whether it is a water section used for steam having nipple connections top and bottom or if connection is only at bottom.

Where ordering steam sections for the centre of a radiator, state whether it is a centre leg or ordinary centre section, and all other particulars asked for above.

Where ordering sections for repairs of hot water radiators, give all particulars asked for above, and further whether tapped for twin or single connection, and whether tapping is right or left, and the size of same.

For convenience in handling radiators, it is well not to order radiators having more than 25 sections in one, two and three column, and 15 sections in four column. Where radiators are required larger than this, it will be better to ship them in two parts.

When ordering curved, angle or circular radiators, kindly refer to page 196, and give all dimensions clearly.

When ordering repairs for radiators, send order direct to the office or branch from which the radiation was purchased and if possible send number and date of invoice referring to same.

STEAM FITTERS' SUPPLIES

WROUGHT IRON AND STEEL PIPE
RADIATOR AIR VALVES
RADIATOR VALVES
BRASS GLOBE, ANGLE AND CHECK VALVES
STEAM COCKS
IRON BODY VALVES
LONG SWEEP FITTINGS
CAST IRON FITTINGS
MALLEABLE IRON FITTINGS
HOOK PLATES, PIPE HANGERS

UNIONS, FLANGE UNIONS
BRANCH TEES
WROUGHT IRON NIPPLES
FLOOR AND CEILING PLATES
EXPANSION TANKS, WATER GAUGES
SECTIONAL PIPE COVERINGS, ASBESTOS
HAIR FELT, COMPANION FLANGES
STEAM TRAPS, REGISTERS
FUSIBLE PLUGS, SAFETY VALVES
GAUGES, EXPANSION JOINTS
BACK PRESSURE VALVES, ETC., ETC.

THE

DOMINION RADIATOR COMPANY
— LIMITED —

St. John Montreal Hamilton **TORONTO** Winnipeg Calgary Vancouver

STEAM FITTERS' SUPPLIES

IRON PIPE

TABLE OF STANDARD DIMENSIONS AND LISTS
Merchants' Wrought Steam, Gas and Water Pipe

Nominal Inside Diam- eter Inches	Price per Foot Black	Circumference		Actual Diameter Inches		Length of Pipe per Sq. Ft. Outside Surface Feet	Inter- nal Area Inches	Thick- ness Inches	Con- tained Pounds of Water per Lineal Foot	Sq. Ft. of Surface per Ft. in Length	Nominal Weight per Ft. Pounds	Length to Thread Inches	No. Threads per Inch of Screw	Size of Tap Drill	Approx. No. of Feet in a Bundle
		External Inches	Internal Inches	Inside	Outside										
$\frac{1}{8}$.05 $\frac{1}{2}$	1.27	.84	.27	.4	9.44	0.05	.068	.024	0.106	0.24	$\frac{9}{32}$	27	$\frac{21}{64}$	370
$\frac{1}{4}$	.06	1.69	1.14	.36	.54	7.075	0.10	.088	.044	0.141	0.42	$\frac{3}{8}$	18	$\frac{29}{64}$
$\frac{3}{8}$	.06	2.12	1.55	.49	.67	5.657	0.19	.091	.082	0.177	0.56	$\frac{7}{16}$	18	$\frac{19}{32}$
$\frac{1}{2}$.08 $\frac{1}{2}$	2.63	1.95	.62	.84	4.547	0.30	.109	.132	0.220	0.85	$\frac{1}{2}$	14	$\frac{23}{32}$	260
$\frac{3}{4}$.11 $\frac{1}{2}$	3.29	2.58	.82	1.05	3.637	0.53	.113	.23	0.275	1.13	$\frac{9}{16}$	14	$\frac{15}{16}$	220
1	.17	4.13	3.29	1.05	1.31	2.903	0.86	.134	.373	0.344	1.67	$\frac{5}{8}$	11 $\frac{1}{2}$	$1\frac{3}{16}$	100
1 $\frac{1}{4}$.23	5.21	4.33	1.38	1.66	2.301	1.49	.140	.648	0.434	2.27	$\frac{11}{16}$	11 $\frac{1}{2}$	$1\frac{15}{32}$	60
1 $\frac{1}{2}$.27 $\frac{1}{2}$	5.96	5.06	1.61	1.9	2.01	2.03	.145	.883	0.497	2.71	$\frac{13}{16}$	11 $\frac{1}{2}$	$1\frac{23}{32}$	60
2	.37	7.46	6.49	2.07	2.37	1.608	3.35	.154	1.454	0.621	3.65	$\frac{7}{8}$	11 $\frac{1}{2}$	$2\frac{3}{16}$	Sold by Lengths
2 $\frac{1}{2}$	.58 $\frac{1}{2}$	9.03	7.75	2.47	2.87	1.328	4.78	.204	2.072	0.753	5.79	1	8	$2\frac{11}{16}$
3	.76 $\frac{1}{2}$	10.99	9.63	3.07	3.5	1.091	7.38	.217	3.202	0.916	7.57	1	8	$3\frac{5}{16}$	
3 $\frac{1}{2}$	.92	12.56	11.14	3.55	4.	0.955	9.88	.226	4.285	1.047	9.10	$1\frac{1}{16}$	8	$3\frac{13}{16}$
4	1.09	14.13	12.64	4.03	4.5	0.849	12.73	.237	5.517	1.178	10.79	$1\frac{1}{8}$	8	$4\frac{7}{32}$	
4 $\frac{1}{2}$	1.27	15.70	14.16	4.51	5.	0.764	15.96	.246	6.908	1.309	12.53	$1\frac{1}{4}$	8	$4\frac{21}{32}$	
5	1.48	17.47	15.84	5.04	5.56	0.687	19.99	.259	8.668	1.456	14.61	$1\frac{1}{4}$	8	$5\frac{15}{64}$	
6	1.92	20.81	19.05	6.06	6.62	0.577	28.88	.280	12.521	1.734	18.97	$1\frac{3}{8}$	8	$6\frac{1}{4}$	
7	2.38	23.95	22.06	7.02	7.62	0.501	38.73	.301	16.79	1.996	23.54	$1\frac{1}{2}$	8	$7\frac{5}{16}$	
8 Light	2.50	27.09	25.35	8.071	8.62	0.443	51.16	.277	.....	2.256	24.69	$1\frac{5}{8}$	8	$8\frac{5}{16}$
8 Stn'd	2.88	27.09	25.07	7.98	8.62	0.443	50.03	.322	21.688	2.256	28.55	$1\frac{5}{8}$	8	$8\frac{5}{16}$	
9	3.45	30.23	28.07	8.94	9.62	0.397	62.73	.344	27.58	2.520	33.90	$1\frac{5}{8}$	8	$9\frac{5}{16}$	
10 Light	3.20	33.77	32.019	10.19	10.75	0.355	81.58	.279	.....	2.814	31.20	$1\frac{3}{4}$	8	$10\frac{5}{16}$
10 Med.	3.50	33.77	31.84	10.136	10.75	0.355	80.69	.307	.....	2.814	34.24	$1\frac{3}{4}$	8	$10\frac{5}{16}$
10 Stn'd	4.12	33.77	31.47	10.02	10.75	0.355	78.83	.366	34.171	2.814	40.48	$1\frac{3}{4}$	8	$10\frac{5}{16}$	
11	4.63	36.91	34.55	11.	11.75	0.325	95.03	.375	41.189	3.076	45.55	.....	8	$11\frac{5}{16}$
12 Light	4.50	40.05	37.98	12.09	12.75	0.299	114.80	.330	.....	3.338	43.77	.....	8	$12\frac{5}{16}$
12 Stn'd	5.07	40.05	37.7	12.	12.75	0.299	113.09	.375	49.017	3.338	49.56	.....	8	$12\frac{5}{16}$

STEAM FITTERS' SUPPLIES

IRON PIPE

Extra Strong					Double Extra Strong				
Size Inches	Price per Foot	Actual Outside Diameter	Nominal Inside Diameter	Nominal Wt. per Foot Pounds	Size Inches	Price per Foot	Actual Outside Diameter	Nominal Inside Diameter	Nominal Wt. per Foot Pounds
$\frac{1}{8}$	\$0.11	.405	.205	.29	$\frac{1}{2}$	\$0.25	.84	.244	1.70
$\frac{1}{4}$	.11	.540	.294	.54	$\frac{3}{4}$	.30	1.05	.422	2.44
$\frac{3}{8}$	.11	.675	.421	.74	1	.37	1.315	.587	3.65
$\frac{1}{2}$	.12	.840	.542	1.09	$1\frac{1}{4}$	.52	1.66	.885	5.20
$\frac{3}{4}$	.15	1.05	.736	1.39	$1\frac{1}{2}$	.65	1.90	1.088	6.40
1	.22	1.315	.951	2.17	2	.95	2.375	1.491	9.02
$1\frac{1}{4}$	.30	1.66	1.272	3.00	$2\frac{1}{2}$	1.37	2.875	1.755	13.68
$1\frac{1}{2}$	.36	1.900	1.494	3.63	3	1.92	3.50	2.284	18.56
2	.50	2.375	1.933	5.02	$3\frac{1}{2}$	2.45	4.00	2.716	22.75
$2\frac{1}{2}$	.81	2.875	2.315	7.67	4	2.85	4.50	3.136	27.48
3	1.05	3.500	2.892	10.25	$4\frac{1}{2}$	3.30	5.00	3.564	32.53
$3\frac{1}{2}$	1.33	4.000	3.358	12.47	5	3.80	5.563	4.063	38.12
4	1.50	4.500	3.818	14.97	6	5.30	6.625	4.875	53.11
$4\frac{1}{2}$	1.95	5.000	4.280	18.22	7	6.25	7.625	5.875	62.38
5	2.16	5.563	4.813	20.54	8	7.20	8.625	6.875	71.62
6	2.90	6.625	5.750	28.58					
7	3.80	7.625	6.625	37.67					
8	4.30	8.625	7.625	43.00					

Extra strong and double extra strong pipe is always shipped without threads or couplings unless otherwise ordered.

Temp. at which pipe is fitted	EXPANSION OF WROUGHT IRON PIPE							
	100 Feet original length, will be when heated to							
	160°	180°	212°	220°	230°	240°	250°	260°
0°	100' 1.28"	100' 1.44"	100' 1.69"	100' 1.79"	100' 1.88"	100' 1.92"	100' 2.00"	100' 2.12"
32°	100' 1.02"	100' 1.18"	100' 1.43"	100' 1.53"	100' 1.62"	100' 1.66"	100' 1.74"	100' 1.86"
62°	100' 0.8"	100' 1."	100' 1.22"	100' 1.29"	100' 1.37"	100' 1.45"	100' 1.53"	100' 1.62"
75°	100' 0.7"	100' 0.86"	100' 1.12"	100' 1.18"	100' 1.26"	100' 1.35"	100' 1.43"	100' 1.51"
	Hot Water		Atmosphere	2 lb. press.	5 lb. press.	10 lb. press.	15 lb. press.	20 lb. press.

Care must be taken to allow for free expansion of all mains and risers.

STEAM FITTERS' SUPPLIES**IRON PIPE****CUTTING AND SCREWING PIPE EXTRA**

Size.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8	9	10	12
Cut—Price each.....	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06	\$0.08	\$0.10	\$0.14	\$0.20	\$0.30	\$0.40	\$0.40	\$0.50	\$0.60	\$0.80	\$1.00	\$1.20	\$2.00	\$2.50	\$3.50
Thread—Price each....	.06	.06	.06	.06	.06	.08	.10	.14	.20	.30	.40	.40	.50	.60	.80	1.00	1.20	2.00	2.50	3.50

CUTTING TO LENGTHS EXTRA

Inch	6 ft. and longer		2 ft. and under 6 ft.		1 ft. and under 2 ft.	
	Black	Galvanized	Black	Galvanized	Black	Galvanized
$\frac{1}{4}$	\$0.50	\$0.66	\$0.66	\$0.83	\$0.83	\$1.00 per 100 ft.
$\frac{3}{8}$.....	.50	.66	.66	.83	.83	1.00 "
$\frac{1}{2}$.....	.60	.77	.77	1.02	1.02	1.30 "
$\frac{3}{4}$.....	.68	.81	.81	1.15	1.15	1.50 "
1.....	.83	1.15	1.15	1.65	1.65	2.15 "
$1\frac{1}{4}$	1.13	1.58	1.58	2.25	2.25	2.95 "
$1\frac{1}{2}$	1.35	1.89	1.89	2.70	2.70	3.50 "
2.....	1.80	2.52	2.52	3.60	3.60	4.70 "
$2\frac{1}{2}$	2.85	3.99	3.99	5.70	5.70	7.40 "
3.....	3.70	5.18	5.18	7.40	7.40	9.60 "
$3\frac{1}{2}$	5.20	7.28	7.28	10.40	10.40	13.50 "
4.....	5.95	8.30	8.30	11.90	11.90	15.50 "

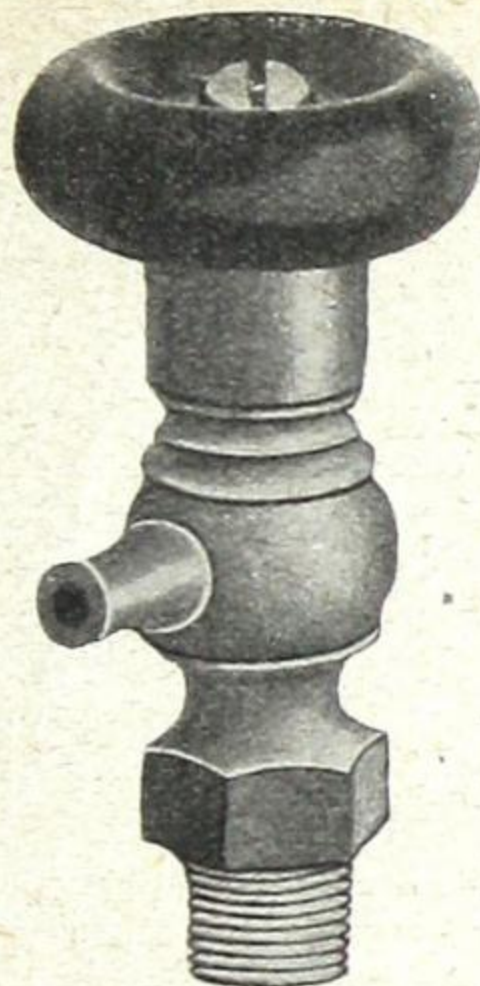
Discounts allowed off above prices.

Pieces under one foot sold on the Nipple List.

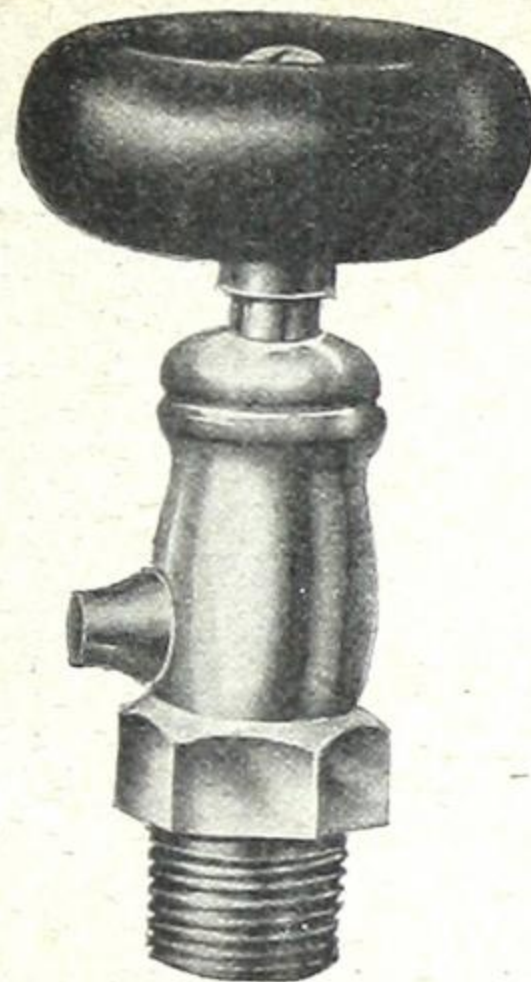
STEAM FITTERS' SUPPLIES HOT WATER RADIATOR AIR VALVES



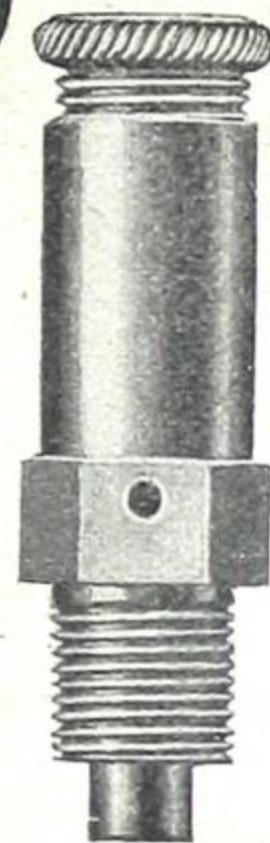
Wood Wheel
Compression
Air Valve



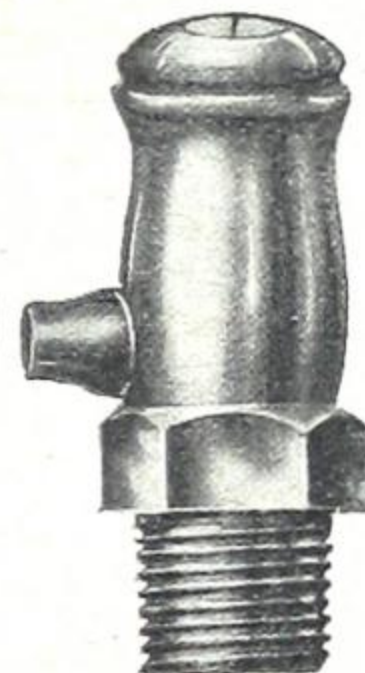
Wood Wheel
Self-Closing
Air Valve



Wood Wheel
Positive
Air Valve



Metal
Midget
Air Valve



Improved Key
Air Valve
including 3 keys



LIST PRICES

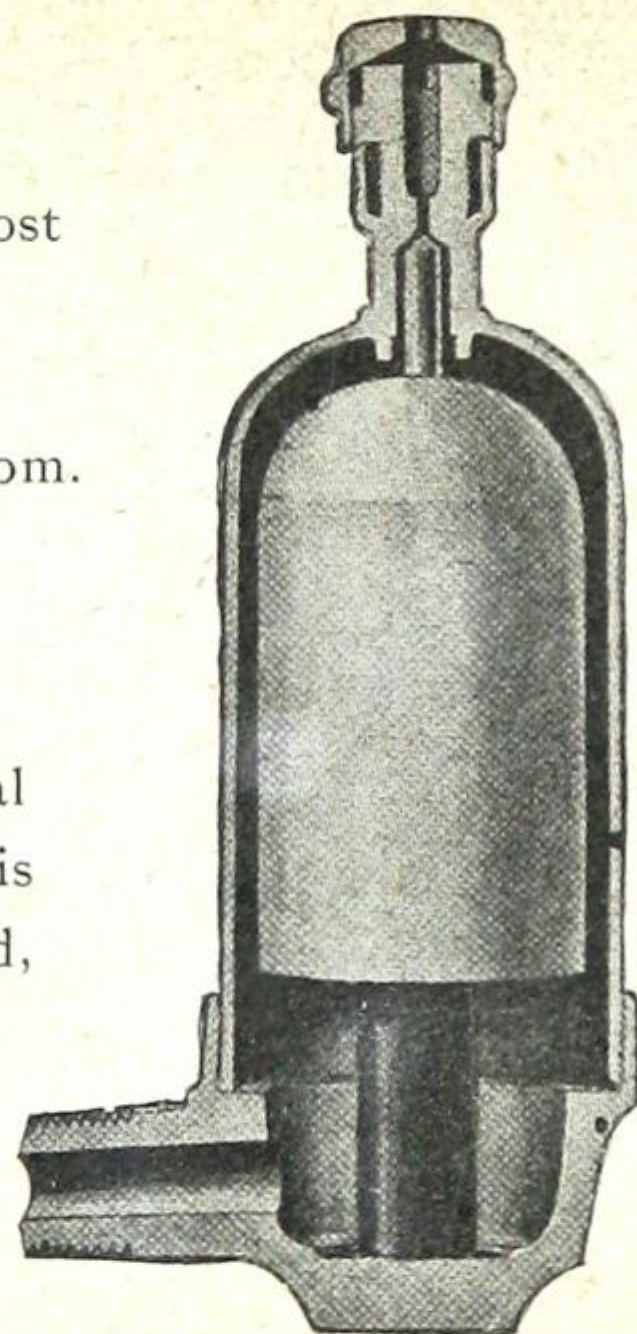
Per Dozen	Compression		Self-Closing	Positive	Midget	Improved
	Wood Wheel	Metal Wheel	Wood Wheel	Wood Wheel	All Metal	With 3 Keys
	\$2.50	\$3.50	\$10.00	\$3.00	\$7.50	\$2.50

STEAM FITTERS' SUPPLIES

AUTOMATIC AIR VALVES

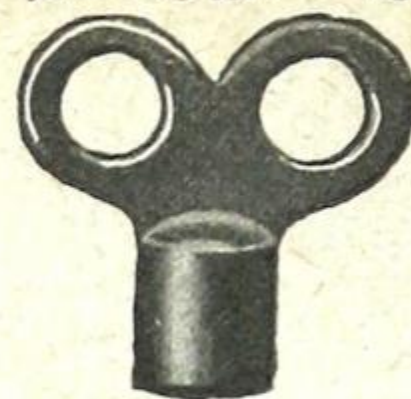
Heavy
Expansion Post
of Carbon
reinforced at
top and bottom.
Shell firmly
threaded
in Base.

Cut $\frac{3}{4}$ actual
size. Valve is
finely finished,
adjustable
and fully
guaranteed.



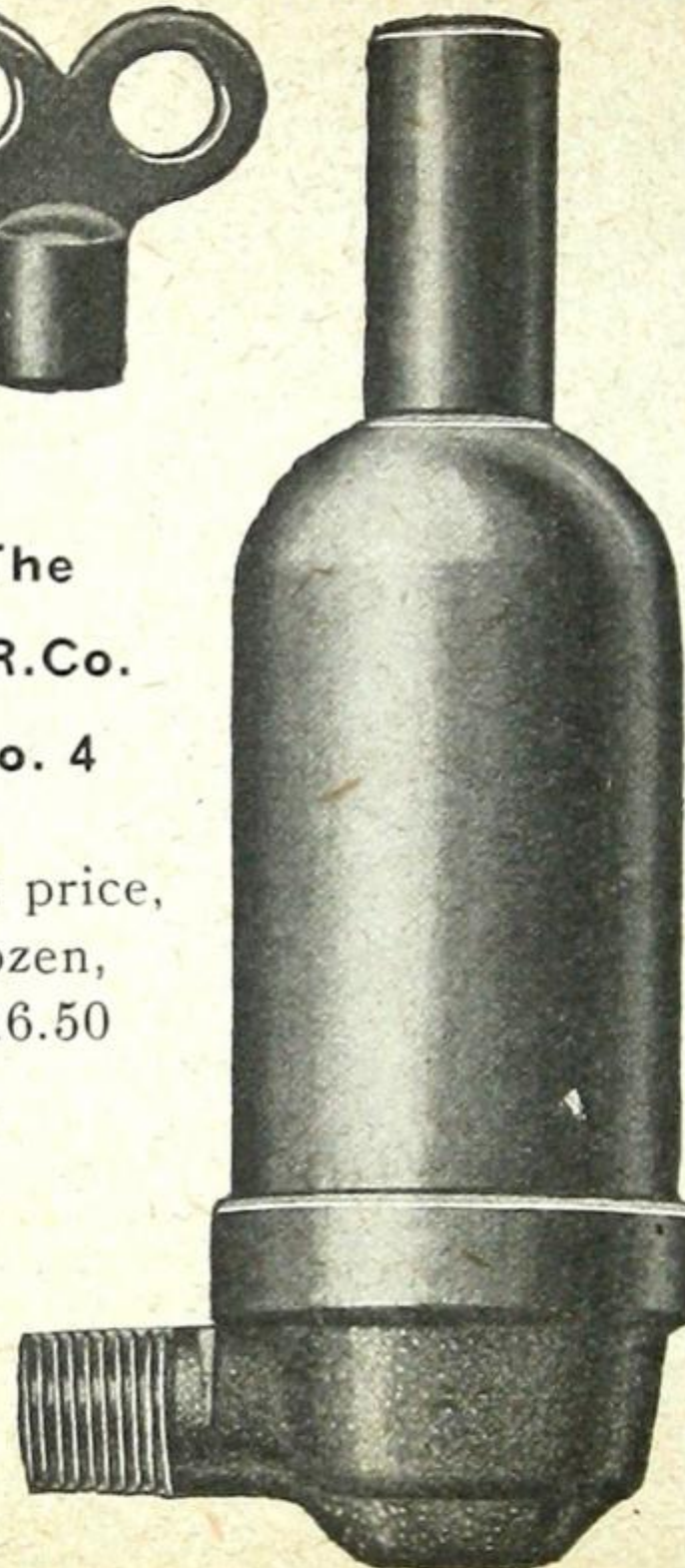
D. R. Co. No. 2

List price, dozen,\$10.50.

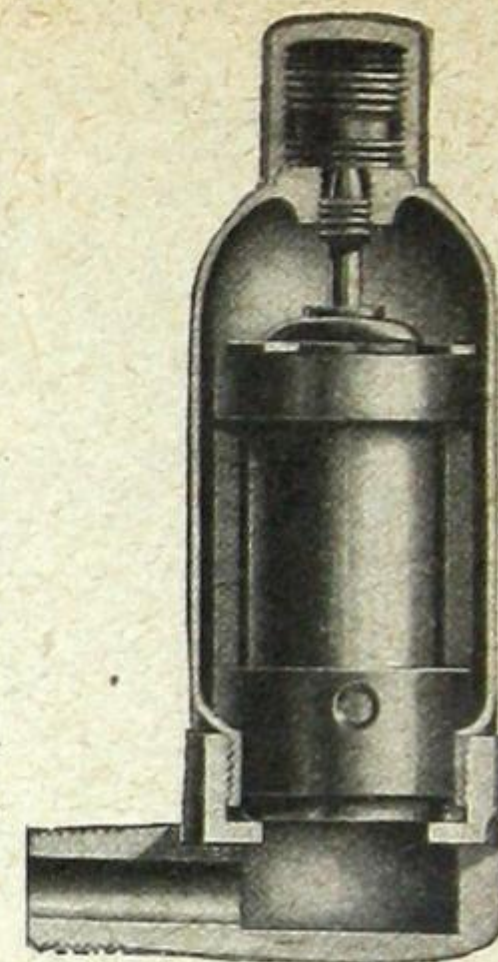


**The
D. R. Co.
No. 4**

List price,
dozen,
\$16.50



Specially
adapted for
Schools,
Hospitals and
Public Buildings.
This Valve is simi-
lar in construction
to the D. R. Co.
No. 2 Automatic
Air Valve, and in
addition has a
Special Lock
Shield attach-
ment.



**Imperial
No. 2 Automatic**

List price, dozen\$16.25
Float cannot become dislocated.
Adjustable Water Seal keeps valve free
from condensation. Constructed en-
tirely of metal, fully nicked. Sensi-
tive exposed cylinder.

No. 03 Automatic

(Similar to above, but with Lock Shield)
List price, dozen\$25.00

STEAM FITTERS' SUPPLIES**THE DUNHAM AIR LINE VALVES**

A strictly high grade Air Valve with hollow corrugated, thermostatic disc, for use on steam systems of the one or two-pipe gravity type.

These valves have large capacity for handling air, are automatic and require no adjusting for different steam pressures.

They relieve the radiators of air so easily that circulation is effected on minimum steam pressure.

Applicable only where air line returns are used.

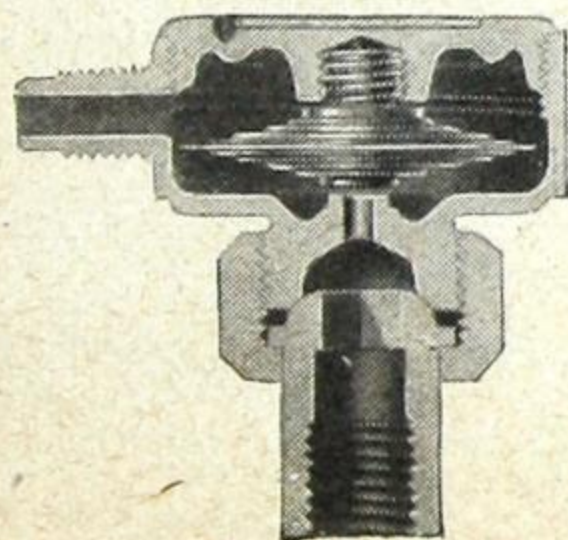
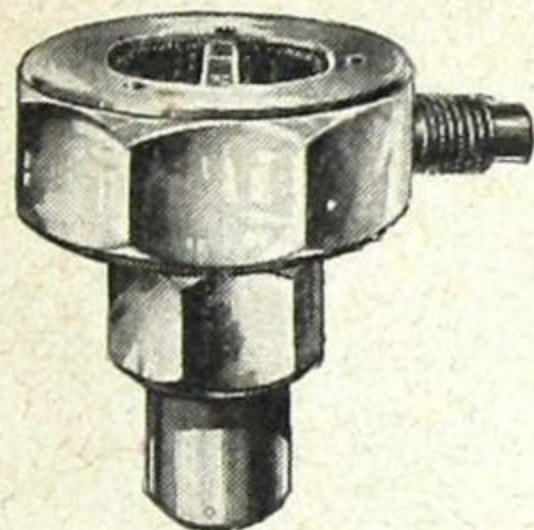
Can be used with or without Exhauster or Vacuum Pump.

$\frac{1}{8}$ " x $\frac{1}{4}$ " size Dunham Air Valve, nickel plated, list, \$4.00 each.

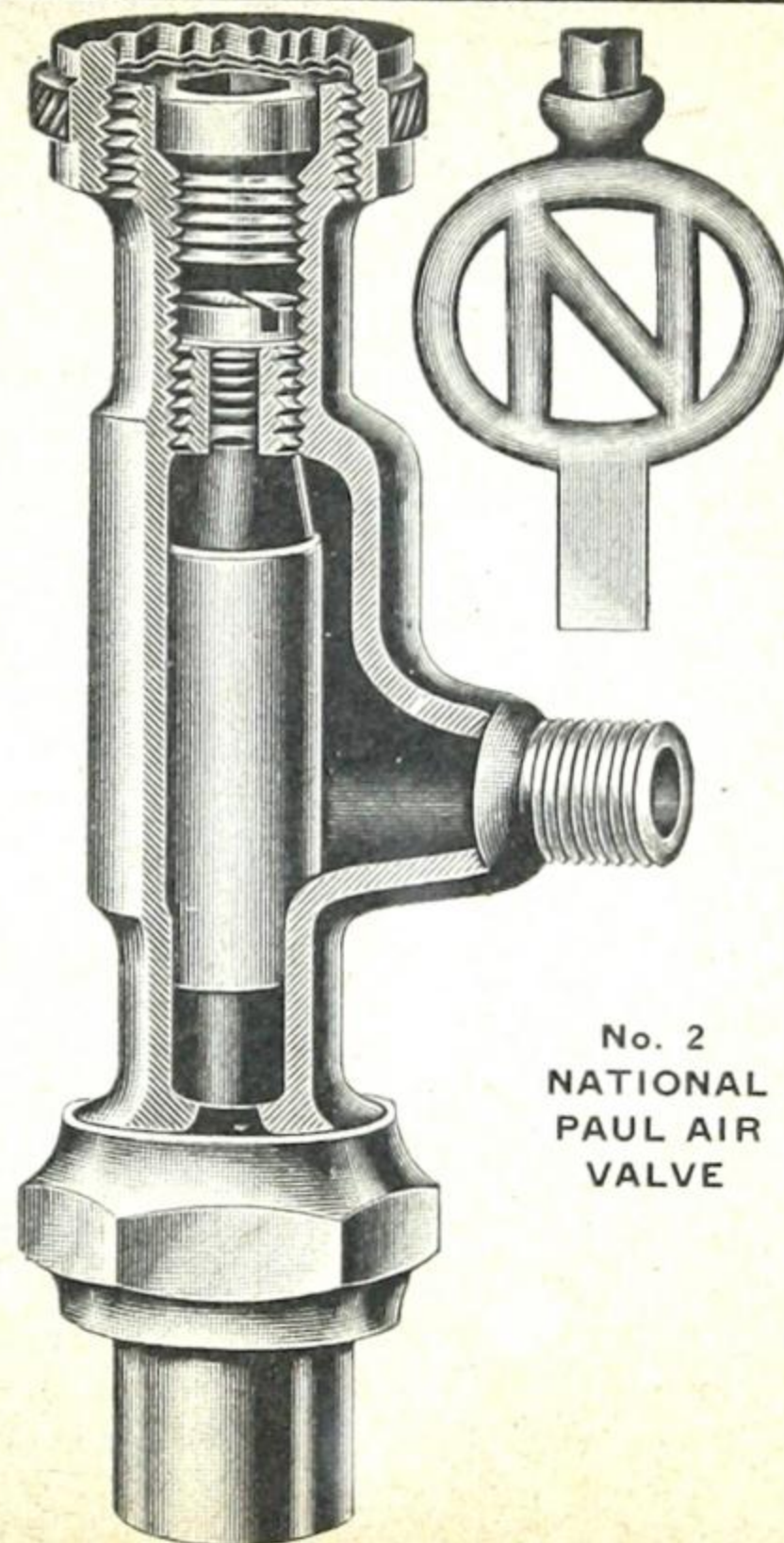
No. 2 National Paul

Especially adapted for Air Lines on Vacuum Heating Systems.

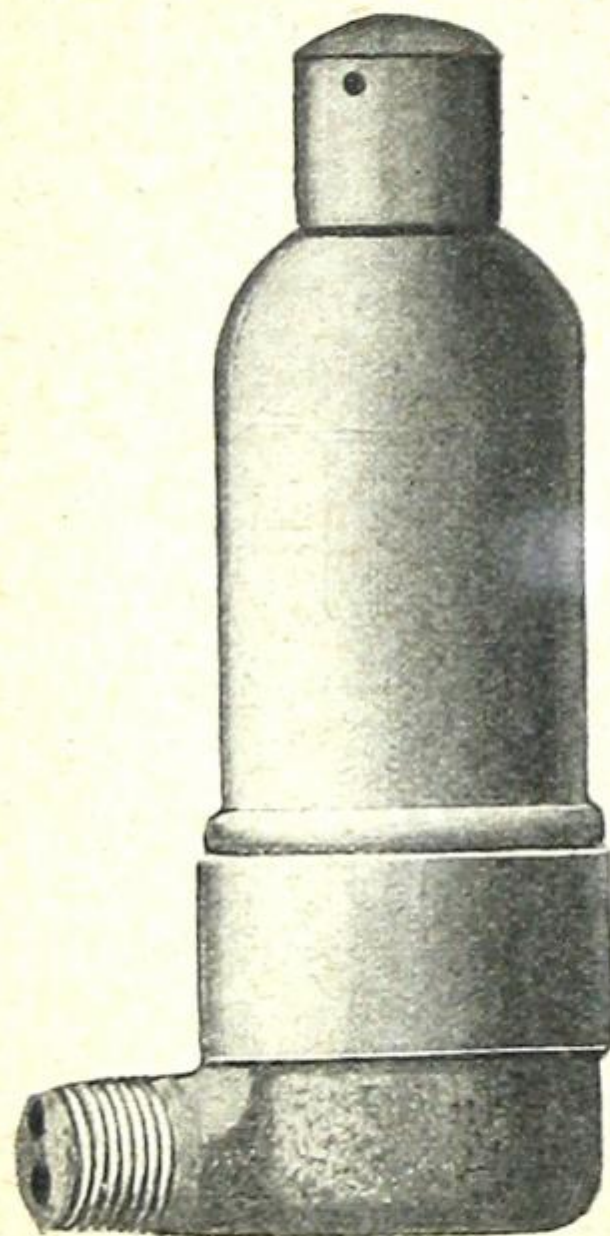
List price, dozen, \$30.00



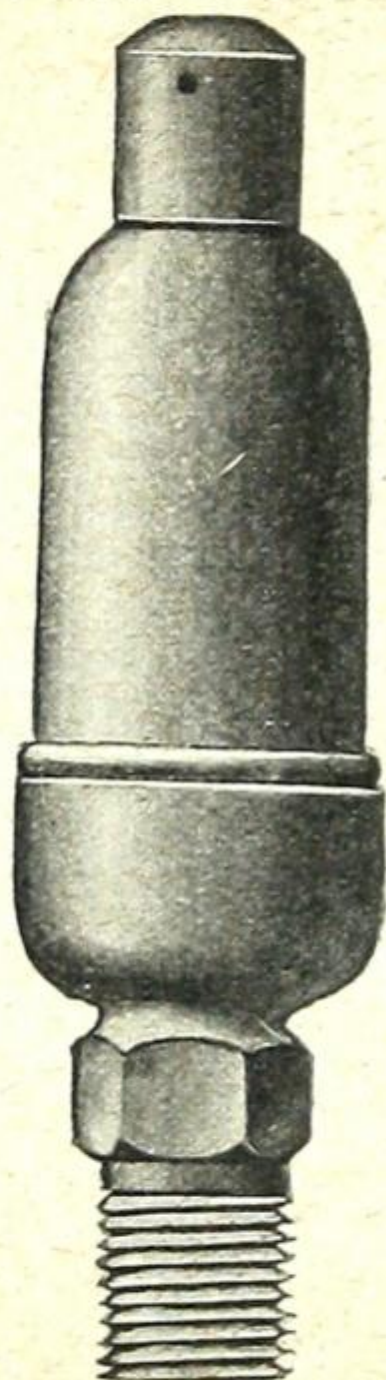
DUNHAM AIR LINE VALVE

No. 2
NATIONAL
PAUL AIR
VALVE

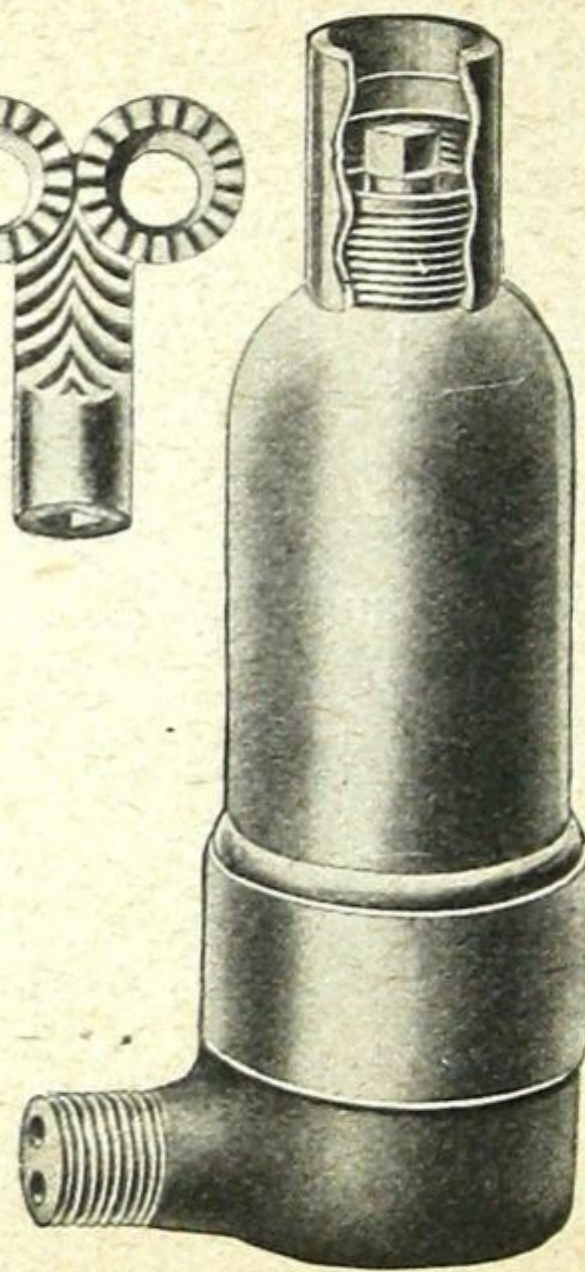
STEAM FITTERS' SUPPLIES
PERFECT AUTOMATIC AIR VALVES



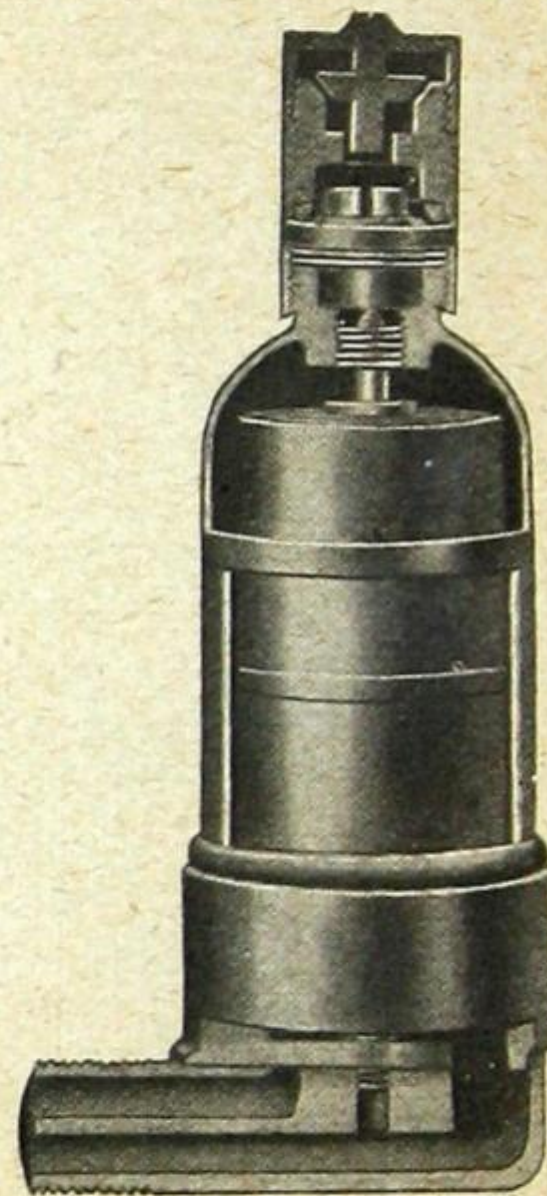
No. 1 Perfect
List price, dozen, \$22.50



No. 3 Perfect Quick Venting
Dozen, \$22.50



No. 5 Perfect Lock Shield
Dozen, \$30.00



Vacuum Valve
Dozen, \$40.00

STEAM FITTERS' SUPPLIES**MOGUL****Non-Adjustable Automatic Air Valve**

With or Without Siphon

Guaranteed for
Five Years

No adjustable parts,
thus the efficiency is not
interfered with.

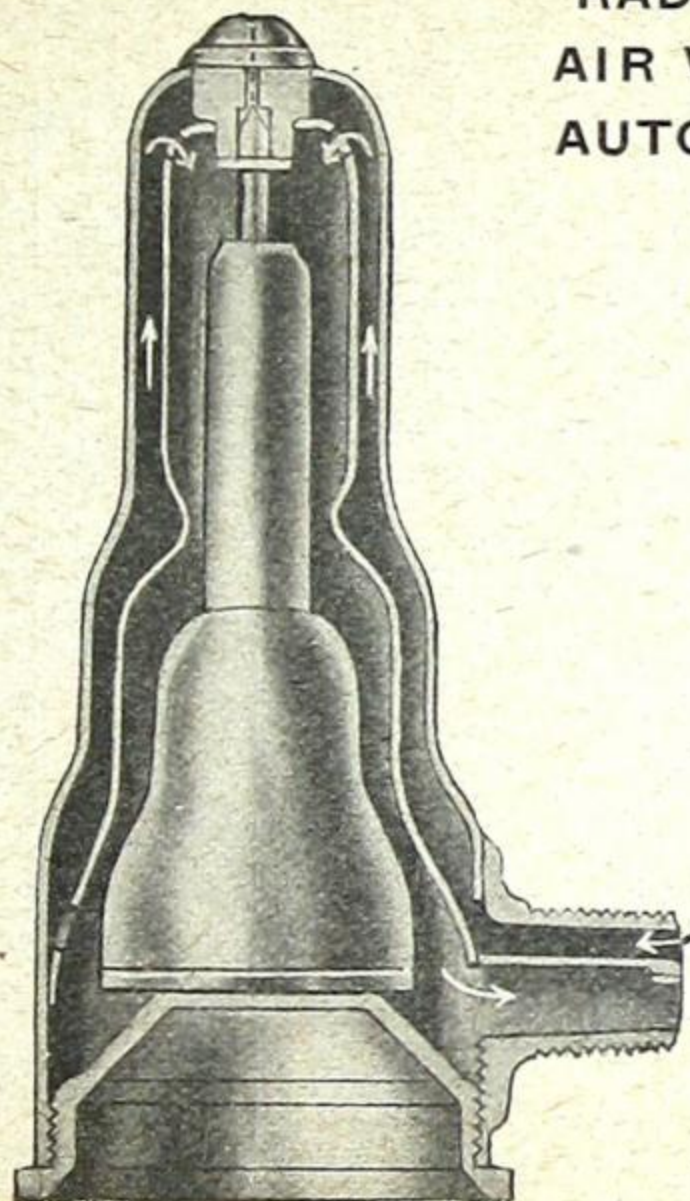
Positive in action,
maintaining perfect con-
trol, rendering all loops
in the radiator equally
efficient.

Heavy and durable.

Specially valuable in
public buildings or on
any radiator liable to be
disturbed.

No parts to become
lost in handling.

All parts accessible
and easily cleaned.



Mogul Non-adjustable

List price, dozen, \$30.00

**STEAM
RADIATOR
AIR VALVES
AUTOMATIC**

MOGUL**Siphon Air and Vacuum Valve**

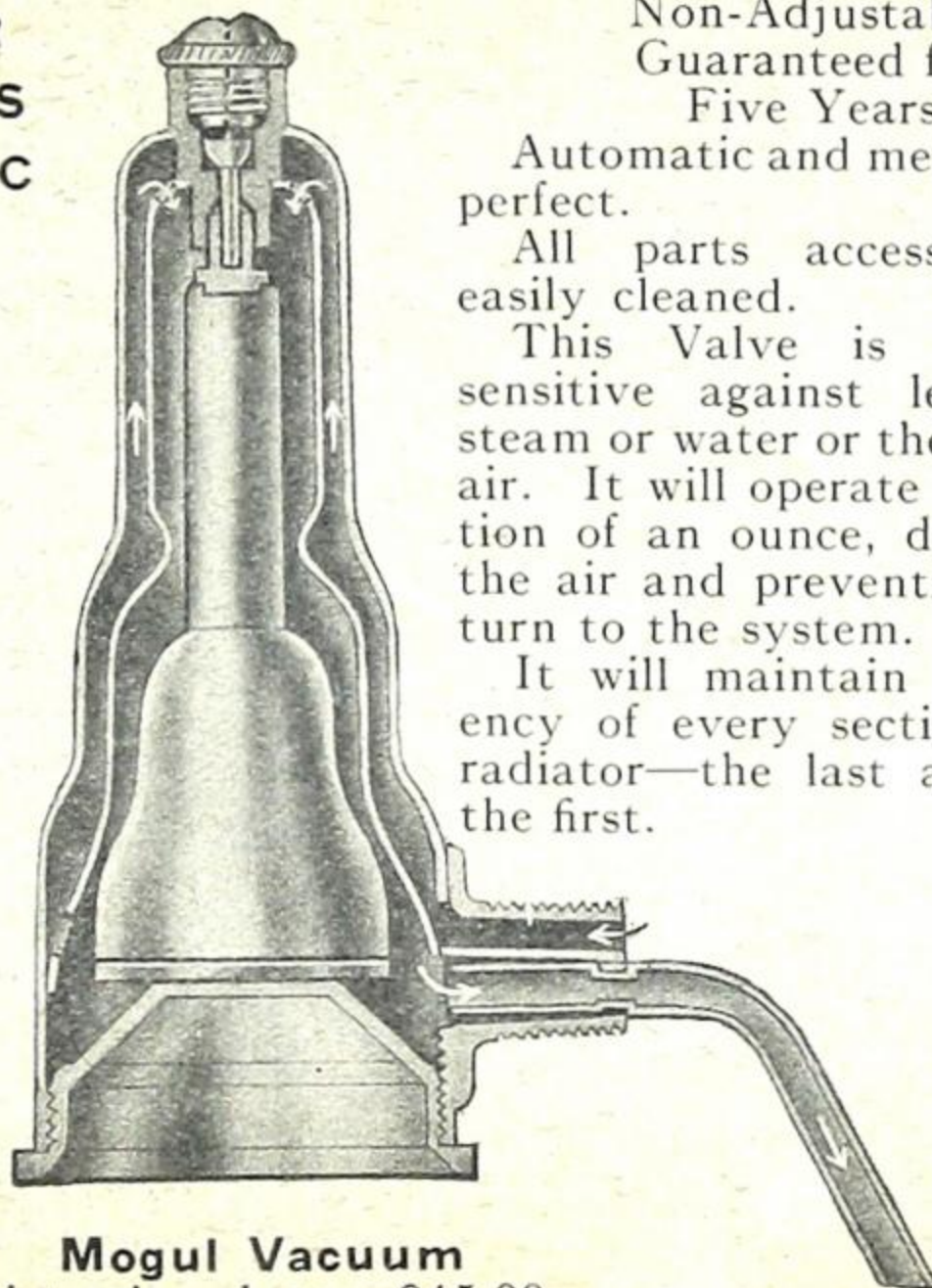
Non-Adjustable
Guaranteed for
Five Years

Automatic and mechanically
perfect.

All parts accessible and
easily cleaned.

This Valve is extremely
sensitive against leakage of
steam or water or the return of
air. It will operate on a frac-
tion of an ounce, discharging
the air and preventing its re-
turn to the system.

It will maintain the effi-
ciency of every section of the
radiator—the last as well as
the first.



Mogul Vacuum

List price, dozen, \$45.00

STEAM FITTERS' SUPPLIES

STANDARD BRASS VALVES, BRASS AND IRON COCKS

Sizes.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Standard Globe.....		\$0.72	\$0.77	\$1.00	\$1.26	\$1.80	\$2.52	\$3.50	\$5.30	\$10.00	\$14.40	\$26.50	\$36.00
“ Angle.....		.72	.77	1.00	1.26	1.80	2.52	3.50	5.30	10.00	14.40	26.50	36.00
“ Peet.....			1.45	1.65	2.05	2.80	3.70	5.00	7.30				
Weber Gate.....		1.45	1.45	1.65	2.05	2.80	3.70	5.00	7.30	13.00	19.00		
Jenkins Type K Gate Scd.....		1.45	1.45	1.65	2.05	2.80	3.70	5.00	7.30	13.00	19.00		
Jenkins Type K Gate Flanged.....					9.00	10.25	12.00	15.00	25.00	33.00	39.00		
Jenkins or D. R. Globe.....		1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00		
Jenkins or D. R. Angles.....		1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00		
Standard Horizontal Check.....		.65	.70	.90	1.15	1.60	2.25	3.15	4.75	9.00	13.00	24.00	32.50
Standard Vertical & Angle Check.....		.72	.77	1.00	1.26	1.80	2.52	3.50	5.30				
Swing Check.....			1.80	2.00	2.25	2.80	3.65	4.75	6.75	15.00	24.00		
Jenkins or D. R. Check.....			1.20	1.30	1.90	2.60	3.60	5.00	7.50	13.50			
Expansion Joints, Brass.....				1.50	2.20	2.75	4.00	5.00	8.00	17.50	24.00		
Steam Cocks, Sq. Head, Brass.....		.85	1.00	1.25	1.70	2.35	3.70	4.85	7.30	14.50	22.50	38.50	50.00
“ “ Three-way, Brass.....			2.10	2.50	3.00	3.75	5.75	7.15	11.00	18.75	26.00	50.00	70.00
“ “ Iron.....				.90	1.05	1.30	1.60	1.95	2.70	4.40	6.75	12.00	15.50
“ “ “ with brs. washer.....				1.00	1.20	1.55	1.95	2.35	3.20	5.15	7.75	14.00	19.00
“ “ “ brass plug.....				1.30	1.60	1.90	2.65	3.75	5.25	8.75	13.00	27.50	36.50
“ “ “ three-way.....					1.65	1.80	2.05	2.65	3.65	5.35	7.50	14.00	19.00
“ “ “ with brs. washer.....					1.80	2.05	2.40	3.05	4.15	6.10	8.50	16.00	22.50
“ “ “ brass plug.....					2.20	2.40	3.10	4.50	6.25	9.75	13.75	30.00	40.00
Pet Cocks, T Handle.....	.40	.45	.50	.60									
Pet Cocks, L Handle.....	.55	.60	.65	.75									
Rough Stop Cocks, T Handle, per doz.....			20.40	21.00	36.00	52.80							
Rough Stop Cocks, L Handle, per doz.....			20.40	21.00	36.00	52.80							
Rough Stop Waste Cocks, T handle, per doz.....			21.00	21.60	36.60	54.00							
Rough Stop Waste Cocks, L Handle, per doz.....			21.00	21.60	36.60	54.00							
Foot Valves, Standard, Scd., Iron.....					1.15	1.30	1.40	1.90	2.40	3.30	3.90	5.60	7.30
Foot Valves, Standard, Flg'd.....									3.50	4.50	5.75	7.50	9.50
Foot Valves, Galvanized, Scd.....					1.75	2.00	2.10	2.85	3.60	5.00	5.75	8.50	11.00
Discs for Jenkins Valves.....	.06	.06	.08	.08	.10	.12	.18	.24	.36	.48	.80	1.00	1.20

STEAM FITTERS' SUPPLIES

STANDARD IRON BODY VALVES

Sizes.....	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	10	12
Globe & Ang. Val. without Y'ke.....			\$ 5.40	\$ 7.35	\$ 9.80									
" " without Y'ke.....			7.00	9.00	12.50									
" " with Y'ke.....			7.00	9.00	12.50	15.25	19.00	24.00	27.00	37.50	63.00	72.00	114.00	170.00
" " with Y'ke.....			8.60	10.75	15.00	18.50	22.50	27.50	31.00	42.00	68.00	77.00	123.00	187.00
Globe & Ang. Jenk. without Y'ke.....			7.25	11.00	16.00									
" " without Y'ke.....			8.50	13.00	18.00									
" " with Y'ke.....			10.00	12.00	16.75	19.50	24.00	32.00	40.00	48.00	80.00	90.00	130.00	185.00
" " with Y'ke.....			11.75	14.00	18.50	21.50	26.00	34.00	42.00	50.00	80.00	90.00	130.00	185.00
Horizontal Check Valves.....			3.60	6.50	8.90	12.25	14.25	19.00	22.00	30.00	45.00	57.00	105.00	155.00
Angle Check Valves.....			3.60	6.50	8.90	12.25	14.25	19.00	22.00	30.00	45.00	57.00	105.00	155.00
Horizontal Check Valves.....			5.25	8.25	11.50	15.50	18.00	22.50	26.00	35.00	50.00	62.00	115.00	175.00
Angle Check Valves.....			5.25	8.25	11.50	15.50	18.00	22.50	26.00	35.00	50.00	62.00	115.00	175.00
Vertical Check Valves.....			7.00	9.50	12.50	17.00	21.00	30.00	33.00	40.00	62.00	73.00	125.00	
Vertical Check Valves.....			8.75	11.50	15.00	20.00	25.00	33.50	37.00	45.00	67.00	78.00	135.00	
Cross Safety Valves.....	5.00	5.80	7.80	13.25	17.25	23.00	28.75	34.50	41.50	57.75	93.50	132.00		
Angle Safety Valves.....	5.00	5.80	7.80	13.25	17.25	23.00	28.75	34.50	41.50	57.75	93.50	132.00		
Cross Safety Valves.....			10.25	16.00	21.50	27.50	34.00	40.00	48.00	65.00	100.00	140.00		
Angle Safety Valves.....			10.25	16.00	21.50	27.50	34.00	40.00	48.00	65.00	100.00	140.00		
Swing Check Valves.....				12.00	13.50	17.50	20.00	26.00	30.00	36.00	55.00	70.00	110.00	160.00
Swing Check Valves.....				14.50	17.00	21.00	24.00	30.00	34.00	41.00	60.00	75.00	115.00	168.00
Jenkins Disc Check Valves.....				10.50	14.00	17.00	20.00	25.00	30.00	40.00				
Jenkins Disc Check Valves.....				12.50	16.50	20.00	23.00	28.00	33.00	43.00				
Expansion Joints, Iron Body.....			7.00	8.00	10.00	14.00	18.00	30.00	38.00	45.00	70.00	100.00	160.00	225.00
Expansion Joints, Iron Body.....			15.00	16.00	18.50	25.00	30.00	40.00	48.00	55.00	80.00	110.00	175.00	250.00
Exp. Jts., Iron Body, 6" Trav'se.....			11.00	13.00	17.50	25.00	30.00	40.00	45.00	55.00				
Exp. Jts., Iron Body, 6" Trav'se.....			18.00	20.00	25.00	35.00	40.00	50.00	55.00	65.00				
Weber Valves.....			10.00	11.50	14.00	17.00	19.00	24.00	27.50	32.50	45.00	54.00	90.00	125.00
Weber Valves.....			12.00	13.50	16.50	19.50	23.00	28.00	31.50	36.50	49.00	58.00	95.00	133.00
Jenkins Type "K" Gate Valves.....			10.00	11.50	14.00	17.00	19.00	24.00	27.50	32.50	45.00	54.00	90.00	125.00
Jenkins Type "K" Gate Valves.....			12.00	13.50	16.50	19.50	23.00	28.00	31.50	36.50	49.00	58.00	95.00	133.00

STEAM FITTERS' SUPPLIES**LONG SWEEP (WATER) FITTINGS**

Sizes.....	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
No. 1 Water Elbows, C.I.....	\$0.32	\$0.40	\$0.55	\$0.80	\$1.20	\$2.25	\$ 3.25	\$ 3.50	\$ 5.50	\$ 6.50	\$ 8.75	\$13.00	\$17.00	\$25.50	\$30.00	\$40.00
No. 2 Dbl. Water Elbows.....	.64	.80	1.10	1.60	2.40	4.50	6.50	7.00	11.00	13.00	17.50	26.00	34.00	51.00	60.00	80.00
No. 3 Water Tees.....	.48	.60	.82	1.20	1.80	3.40	4.90	5.25	8.25	9.75	13.25	19.50	25.50	38.00	45.00	60.00
No. 4 Water Crosses.....	.85	1.10	1.50	2.15	3.20	6.00	8.75	9.50	15.00	17.50	24.00	35.00	45.00	68.00	80.00	107.00
No. 1 Water Elbows, Red'g.....	.48	.60	.83	1.20	1.80	3.38	4.88	5.25	8.25	9.75	13.13	19.50	25.50	38.25	45.00	60.00
No. 2 Dbl. W. Elbows, Red'g.....	.96	1.20	1.65	2.40	3.60	6.75	9.75	10.50	16.50	19.50	26.25	39.00	51.00	76.50	90.00	120.00
No. 3 W. Tees, Red'g.....	.72	.90	1.23	1.80	2.70	5.10	7.35	7.88	12.38	14.63	19.88	29.25	38.25	57.00	67.50	90.00
No. 4 Water Crosses, Red'g.....	.....	1.65	2.25	3.23	4.80	9.00	13.13	14.25	.....	26.25	36.00	52.50	67.50	102.00	120.00	160.50

STEAM FITTERS' SUPPLIES

CAST IRON FITTINGS

Sizes.....	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Elbows, C.I.....	.05	.05	.06	.08	.10 1/2	.16	.20	.28	.50	.75	1.05	1.20	1.75	2.00	2.75	4.70	6.75	9.00	13.50	20.00
“ “ Reducing.....	.06	.06	.07	.09	.12	.18	.23	.32	.60	.85	1.20	1.40	2.00	2.30	3.15	5.40	7.75	10.50	15.50	23.00
“ “ R. and L.....	.06	.06	.07	.09	.12	.18	.23	.32	.60	.85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
“ “ 45°.....	.06	.06	.07	.10	.12	.19	.24	.34	.60	.90	1.25	1.45	2.20	2.50	3.45	5.90	8.50	11.25	17.00	25.00
Tees.....	.08	.08	.09	.12	.15	.23	.29	.41	.73	1.10	1.50	1.75	2.55	3.00	4.00	6.80	9.75	13.00	19.50	29.00
Tees Reducing.....	.....	.....	.10	.14	.17	.27	.33	.47	.83	1.25	1.75	2.00	2.95	3.50	4.60	7.80	11.25	15.00	22.50	33.50
Crosses.....	.....	.....	.....	.....	.27	.42	.53	.75	1.30	2.00	2.70	3.15	4.60	5.50	7.25	12.25	17.50	23.50	35.00	52.50
“ Reducing.....	.....	.....	.18	.25	.30	.46	.60	.83	1.45	2.20	3.00	3.50	5.00	6.00	8.00	13.50	19.25	26.00	38.50	58.00
Return Bends, Close.....	.....	.....	.....	.....	.22	.28	.40	.57	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
“ “ Open.....	.....	.....	.....	.....	.30	.40	.55	.80	1.35	2.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
“ “ Pitched.....	.....	.....	.....	.....	.26	.33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caps, C.I.....	.....	.....	.....	.....	.....	.....	.....	.26	.40	.54	.75	.87	1.05	1.20	1.55	2.50	2.85	4.75	5.50	7.00
Reducing Couplings, C.I.....	.....	.....	.....	.....	.....	.....	.....	.43	.60	.80	1.00	1.35	1.85	2.00	2.70	5.35	6.75	8.35	10.00	15.00
Reducing Couplings, Eccentric, C.I.....	.....	.....	.....	.....	.....	.....	.....	1.00	1.50	2.40	3.00	4.00	5.00	6.00	8.00	9.00	11.00	12.50	14.00	18.00
Offset Reducing Couplings.....	.....	.....	.....	.....	.60	.70	.90	1.10	1.80	2.50	3.00	4.00	5.00	6.00	.....	.....	.....	.....	.....	.....
Locknuts, C.I.....	.....	.....	.....	.....	.....	.....	.....	.25	.27	.34	.47	.64	.85	.90	1.30	1.70	2.35	2.70	3.00	4.00
Couplings, W.I.....	.05	.06	.07	.10	.13	.17	.21	.28	.40	.60	.85	1.00	1.50	1.65	2.40	3.25	4.25	5.50	7.50	10.00
Grip Couplings, Plain.....	.30	.40	.50	.60	.80	1.20	1.60	2.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
“ “ Galv'd.....	.45	.60	.75	.90	1.20	1.80	2.40	3.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mall. Union Elbows, with Male Union.....	.43	.45	.48	.62	.72	1.05	1.20	1.80	3.30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hexagon R. & L. Nipples.....	.....	.....	.....	.25	.30	.40	.50	.70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plugs, R. H.....	.02	.02	.02	.03	.04	.05	.07	.10	.18	.25	.38	.42	.65	.88	1.20	1.85	2.75	3.25	3.75	5.00
“ Left.....	.....	.....	.....	.06	.08	.09	.11	.15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
“ R. H., Galvanized.....	.04	.04	.04	.06	.08	.10	.14	.20	.36	.50	.76	.84	.....	.....	.....	.....	.....	.....	.....	.....
“ Solid.....	.....	.....	.04	.06	.08	.09	.11	.15	.27	.38	.57	.63	1.00	1.35	1.80	.....	.....	.....	.....	.....
“ Countersunk.....	.....	.....	.04	.06	.08	.09	.11	.15	.30	.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bushings, R. H.....	.....	.04	.04	.05	.06	.07	.09	.14	.21	.30	.40	.50	.75	.93	1.25	1.87	2.75	3.25	3.75	5.00
“ Left.....	.....	.08	.08	.10	.12	.14	.18	.28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
“ R. H. Galv'd.....	.....	.08	.08	.10	.12	.14	.18	.28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
“ Faced.....	.....	.08	.09	.11	.13	.17	.22	.32	.48	.70	1.20	1.50	2.10	2.60	3.75	.....	.....	.....	.....	.....
Eureka Circulating Tees.....	.....	.....	.....	.....	.....	.....	.....	.90	1.30	1.50	1.90	2.20	3.20	3.70	4.90	.....	15.00	.....	.....	.....
Range Boiler Couplings.....	.....	.....	.60	.75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crossovers, Black.....	.....	.....	.20	.30	.45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
“ Galvanized.....	.....	.....	.25	.40	.60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

STEAM FITTERS' SUPPLIES**STANDARD CAST IRON FLANGED FITTINGS****For Steam Working Pressures up to 125 pounds**

Size.....	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	15	16	18	20	22	24
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Elbows—																						
90°, Faced...	3.00	3.00	3.00	3.15	3.45	4.05	4.50	5.50	6.25	7.60	10.50	12.00	17.00	19.00	28.00	41.50	47.00	54.50	71.00	90.00	113.00	140.00
90°, F. & D...	3.60	3.60	3.60	3.75	4.15	4.90	5.50	6.50	7.25	8.90	12.00	13.60	19.25	21.70	31.00	45.25	51.50	59.50	77.00	97.00	122.00	150.00
45°, Faced...	3.30	3.30	3.30	3.50	3.80	4.50	5.00	6.00	6.90	8.35	11.00	12.60	17.75	20.00	29.50	41.50	47.00	54.50	71.00	90.00	113.00	140.00
45°, F. & D...	3.90	3.90	3.90	4.10	4.50	5.35	6.00	7.00	7.90	9.65	12.50	14.20	20.00	22.70	32.50	45.25	51.50	59.50	77.00	97.00	122.00	150.00
Taper Redc'g																						
Faced.....					6.90	8.10	9.00	11.00	12.50	15.25	21.00	24.00	34.00	38.00	56.00							
F. & D.....					7.60	8.95	10.00	12.00	13.50	16.55	22.50	25.60	36.25	40.70	59.00							
Tees—																						
Faced.....	4.35	4.35	4.35	4.55	5.00	5.85	6.50	8.00	9.10	11.00	15.25	17.40	24.65	27.50	40.50	60.00	68.00	79.00	103.00	130.00	164.00	203.00
F. & D.....	5.25	5.25	5.25	5.45	6.10	7.10	8.00	9.50	10.60	12.95	17.50	19.80	28.00	31.50	45.00	65.50	74.75	86.50	112.00	140.00	177.00	218.00
Reducing,																						
Faced.....		5.00	5.00	5.25	5.75	6.75	7.50	9.25	10.50	12.65	17.50	20.00	28.50	31.50	46.50	69.00	78.00	91.00	118.00	150.00	189.00	233.00
F. & D.....		5.90	5.90	6.15	6.85	8.00	9.00	10.75	12.00	14.60	19.75	22.40	31.85	35.50	51.00	74.50	84.75	98.50	127.00	160.00	202.00	248.00
Y's—																						
Faced.....	6.75	6.75	6.75	6.95	7.65	9.00	10.00	12.00	13.75	16.75	23.00	26.50	37.50	42.00	61.50	91.00	103.00	120.00				
F. & D.....	7.95	7.95	7.95	8.15	9.05	10.70	12.00	14.00	15.75	19.25	26.00	29.75	42.00	47.50	67.50	98.50	112.00	130.00				
Reducing,																						
Faced.....			7.75	8.00	8.75	10.35	11.50	13.75	15.75	19.25	26.50	30.50	43.00	48.00	71.00	105.00	118.00	138.00				
F. & D.....			8.95	9.20	10.15	12.05	13.50	15.75	17.75	21.75	29.50	33.75	47.50	53.50	77.00	112.50	127.00	148.00				

Dimensions for drilling of Flanged Fittings, same as Flanges, see pages 221 and 223.

STEAM FITTERS' SUPPLIES**STANDARD CAST IRON FLANGED FITTINGS****For Steam working Pressures up to 125 pounds**

Size.....	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	15	16	18	20	22	24
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Elbows—																						
With Base,																						
Faced.....							9.00	11.00	12.50	15.25	21.00	24.00	34.00	38.00	56.00	70.00	80.00	90.00	105.00			
F. & D.....							10.00	12.00	13.50	16.55	22.50	25.60	36.25	40.70	59.00	73.75	84.50	95.00	111.00			
Long Turn,																						
Faced.....			5.00	5.25	5.75	6.75	7.50	9.25	10.50	12.65	17.50	20.00	28.50	31.50	46.50	69.00	78.00	91.00	118.00	150.00		
F. & D.....			5.90	6.15	6.85	8.00	9.00	10.75	12.00	14.60	19.75	22.40	31.85	35.50	51.00	74.50	84.75	98.50	127.00	160.00		
Reducers—																						
Faced.....					6.90	8.10	9.00	11.00	12.50	15.25	21.00	24.00	34.00	38.00	56.00							
F. & D.....					7.60	8.95	10.00	12.00	13.50	16.55	22.50	25.60	36.25	40.70	59.00							
Eccentric,																70.00	80.00	90.00	105.00	120.00	150.00	190.00
F. & D.....																73.75	84.50	95.00	111.00	127.00	159.00	200.00
Crosses—																						
Faced.....	6.75	6.75	6.75	6.95	7.65	9.00	10.00	12.00	13.75	16.75	23.00	26.50	37.50	42.00	61.50	91.00	103.00	120.00	157.00	198.00	248.00	310.00
F. & D.....	7.95	7.95	7.95	8.15	9.05	10.70	12.00	14.00	15.75	19.25	26.00	29.75	42.00	47.50	67.50	98.50	112.00	130.00	169.00	212.00	266.00	330.00
Reducing,																						
Faced.....			7.75	8.00	8.75	10.35	11.50	13.75	15.75	19.25	26.50	30.50	43.00	48.00	71.00	105.00	118.00	138.00	180.00	228.00	285.00	355.00
F. & D.....			8.95	9.20	10.15	12.05	13.50	15.75	17.75	21.75	29.50	33.75	47.50	53.50	77.00	112.50	127.00	148.00	192.00	242.00	303.00	375.00

Furnished faced only, unless otherwise ordered.

Flanges, Flanged Fittings and Valves are drilled in multiples of four, so that they may be made to face in any quarter, and holes straddle centre line.

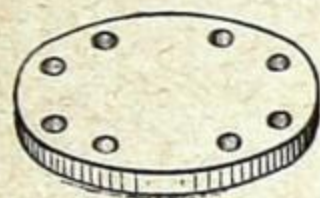
The list price of Eccentric Reducers is the list for Reducers, from the sizes listed reduced to any size smaller.

To figure cost of a Reducing Fitting, use list price of largest size on it.

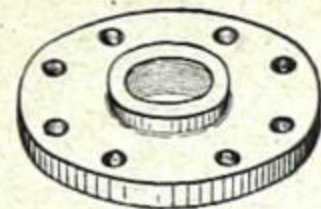
Dimensions for drilling of Flanged Fittings, same as Flanges, see pages 221 and 223.

STEAM FITTERS' SUPPLIES**STANDARD CAST IRON COMPANION FLANGES**

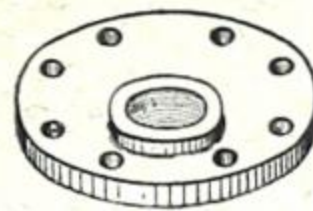
For Steam Working Pressures up to 125 pounds



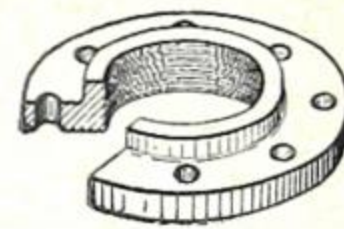
Blind Flange Drilled



Reducing Flange Drilled



Eccentric Reducing Flange Drilled



Regular Flange Drilled

Dimensions and List Prices

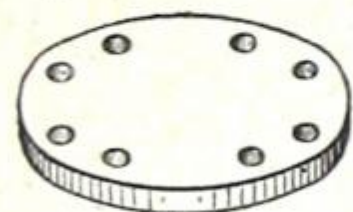
Size of Tapping...Inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12	14	15	16	18	20	22	24
Diam. of Flange...Inches	3 1/2	4	4 1/2	5	6	7	7 1/2	8 1/2	9	9 1/4	10	11	12 1/2	13 1/2	15	16	19	21	22 1/4	23 1/2	25	27 1/2	29 1/2	32
Thickness of Flange...Ins.	1 1/8	1 1/8	1 1/2	1 1/8	5/8	1 1/8	3/4	1 1/8	1 1/8	1 1/8	1 1/8	1	1 1/8	1 1/8	1 1/8	1 3/8	1 1/4	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8	1 1/8	1 7/8
Diam. of Hub...Inches	1 1/2	1 1/8	2 1/8	2 5/8	3 1/8	3 5/8	4 1/8	4 7/8	5 3/8	5 13/16	6 7/16	7 9/16	8 5/8	9 11/16	10 5/8	11 11/16	14 1/8	15 7/16	16 7/16	17 1/2	19 9/16	21 3/4	23 7/8	26
Length of Thread...Inches	5/8	1 1/8	3/4	7/8	1	1 1/16	1 1/8	1 3/16	1 1/16	1 1/4	1 1/16	1 7/16	1 1/2	1 5/8	1 3/4	1 7/8	2 1/16	2 3/16	2 5/16	2 7/16	2 5/8	2 3/4	2 7/8	3
Diam. of Bolt Circle, Ins.	2 1/2	3	3 3/8	3 7/8	4 3/4	5 1/2	6	7	7 1/2	7 3/4	8 1/2	9 1/2	10 3/4	11 3/4	13 1/4	14 1/4	17	18 3/4	20	21 1/4	22 3/4	25	27 1/4	29 1/2
Number of Bolts.....	4	4	4	4	4	4	4	4	8	8	8	8	8	8	12	12	12	12	16	16	16	20	20	20
Size of Bolts.....Inches	3/8	7/16	7/16	1/2	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	7/8	7/8	1	1	1	1 1/8	1 1/8	1 1/4	1 1/4
Length of Bolts...Inches	1 1/2	1 1/2	1 1/2	1 3/4	2	2 1/4	2 1/2	2 1/2	2 3/4	3	3	3	3	3 1/4	3 1/4	3 1/2	3 3/4	4 1/4	4 1/4	4 1/4	4 3/4	5	5 1/2	5 1/2
Diam. of Bolt Holes, Ins.	1/2	9/16	9/16	5/8	3/4	3/4	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 3/8	1 3/8
Faced and Threaded each.....		.55	.60	.65	.75	.85	.95	1.20	1.35	1.45	1.60	2.00	2.65	3.10	3.85	4.50	6.50	9.00	11.50	13.50	16.00	19.00	22.00	27.00
Faced, Drilled & ".....		.80	.85	.90	1.00	1.10	1.25	1.55	1.80	1.90	2.05	2.50	3.25	3.80	4.65	5.50	7.65	10.35	13.20	15.30	18.00	21.50	25.00	30.50
Faced, but Blind.....					1.15	1.30	1.40	1.80	2.00	2.20	2.40	3.00	4.00	4.60	5.75	6.75	9.75	13.50	17.00	20.00	24.00	28.00	33.00	40.00
Faced and Drilled, but Blind.....					1.40	1.55	1.70	2.15	2.45	2.65	2.85	3.50	4.60	5.30	6.55	7.75	10.90	14.85	18.70	21.80	26.00	30.50	36.00	43.50
Bolts for one joint, per set.....					.25	.25	.25	.25	.50	.75	.75	.75	.75	.80	1.20	1.60	1.70	2.50	3.30	3.30	5.00	6.20	8.40	8.40

FURNISHED SMOOTH FACE AND NOT DRILLED, UNLESS OTHERWISE SPECIFIED.

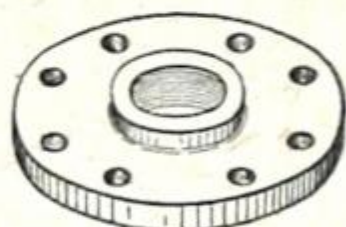
When ordering Companion Flanges, give size of tapping required first, then the outside diameter and if reducing state whether eccentric or ordinary.

STEAM FITTERS' SUPPLIES**STANDARD CAST IRON REDUCING COMPANION FLANGES**

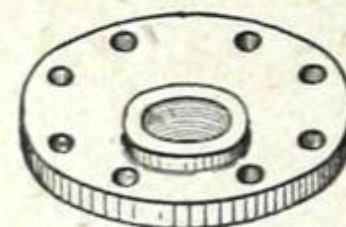
For Steam Working Pressures up to 125 pounds



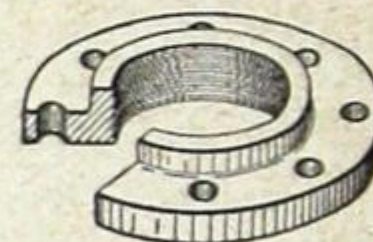
Blind Flange Drilled



Reducing Flange Drilled



Eccentric Reducing Flange Drilled



Regular Flange Drilled

Dimensions and List Prices

Outside Diameter, Ins.	6	7	7½	8½	9	9¼	10	11	12½	13½	15	16	19	21	22¼	23½	25	27½	29½	32
Size of Tapping....Ins.	1	1½	1½	2	2	2½	2	2	4	2	6	2½	6	8	8	10	12	14	15	14
" " " " " "	1¼	2	2	2½	2½	3	2½	2½	4½	2½	7	3	7	9	10	14	14	15	16	16
" " " " " "	1½	.....	2½	3	3	3½	3½	3	5	3	8	3½	8	10	12	15	15	16	18	18
" " " " " "	.....	.....	.....	.....	3½	4	4	3½	6	4	.....	4	9	12	14	.....	16	18	20	20
" " " " " "	.....	.....	.....	.....	.....	.....	.....	4	.....	5	.....	5	10	.....	.....	.....	.....	.....	.....	.....
" " " " " "	.....	.....	.....	.....	.....	.....	.....	4½	.....	6	.....	6	.....	.....	.....	.....	.....	.....	.....	.....
" " " " " "	.....	.....	.....	.....	.....	.....	.....	5	.....	7	.....	7	.....	.....	.....	.....	.....	.....	.....	.....
" " " " " "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	.....	.....	.....	.....	.....	.....	.....	.....
" " " " " "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....
Faced only.....	1.30	1.45	1.55	2.00	2.20	2.40	2.65	3.30	4.40	5.10	6.35	7.45	10.75	15.00	19.00	22.00	26.50	31.00	36.00	44.00
Faced and Drilled....	1.55	1.70	1.85	2.35	2.65	2.85	3.10	3.80	5.00	5.80	7.15	8.45	11.90	16.35	20.70	23.80	28.50	33.50	39.00	47.50

Furnished smooth face and not drilled, unless otherwise specified.

Special Eccentric Flanges, when ordered.

When ordering Companion Flanges, give size of tapping required first, then the outside diameter, and state whether eccentric or ordinary.

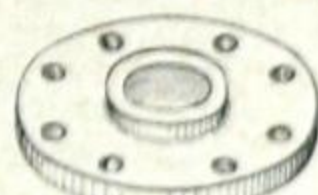
STEAM FITTERS' SUPPLIES

EXTRA HEAVY CAST IRON COMPANION FLANGES

For Steam Working Pressures up to 250 Pounds



Blind Flange Drilled



Reducing Flange Drilled



Eccentric Reducing Flange Drilled



Regular Flange Drilled

And Special Facing Dimensions of Extra Heavy Flanged Fittings, Flanges and Medium and Extra Heavy Valves

Dimensions and List Prices

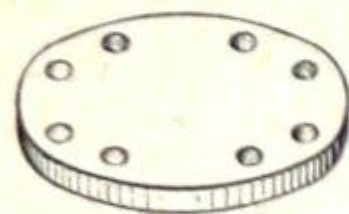
Size.....Inches	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12	14	15	16	18	20	22	24
Diameter of Hub.....Ins.	2 1/8	2 1/2	2 7/8	3 3/8	4	4 5/8	5 1/4	5 3/4	6 3/8	6 3/4	7 1/8	9	10 1/8	11 1/8	12 3/8	14 3/8	15 3/8	16 1/4	18	20 1/8	22 3/8	24 1/2	26 3/4
Diameter of Flange....."	4 1/2	5	6	6 1/2	7 1/2	8 1/4	9	10	10 1/2	11	12 1/2	14	15	16 1/4	17 1/2	20 1/2	23	24 1/2	25 1/2	28	30 1/2	33	36
Thickness of Flange....."	1 1/8	3/4	1 1/8	7/8	1	1 1/8	1 3/8	1 1/4	1 5/8	1 3/8	1 7/8	1 1/2	1 5/8	1 3/4	1 7/8	2	2 1/8	2 3/8	2 1/4	2 3/8	2 1/2	2 3/8	2 3/4
Lg'thof Pipe Thread....."	1	1 1/8	1 1/4	1 3/8	1 7/8	1 5/8	1 3/4	1 1/2	1 7/8	2	2 1/8	2 3/8	2 1/4	2 3/8	2 1/2	2 3/8	2 1/4	2 3/8	2 1/2	2 3/8	3 1/8	3 1/4	3 3/8
Diam. of Bolt Circle....."	3 1/4	3 3/4	4 1/2	5	5 7/8	6 5/8	7 1/4	7 7/8	8 1/2	9 1/4	10 5/8	11 7/8	13	14	15 1/4	17 3/4	20 1/4	21 1/2	22 1/2	24 3/4	27	29 1/4	32
Number of Bolts....."	4	4	4	4	4	8	8	8	8	8	12	12	12	12	16	16	20	20	20	24	24	24	24
Size of Bolts....."	1 1/2	1 1/2	5/8	5/8	3/4	3/4	3/4	3/4	3/4	3/4	3/4	7/8	7/8	1	1	1 1/8	1 1/8	1 1/4	1 1/4	1 1/4	1 3/8	1 1/2	1 5/8
Length of Bolts....."	2	2 1/4	2 1/2	2 1/2	3	3 1/4	3 1/4	3 1/2	3 1/2	3 3/4	3 3/4	4	4 1/4	4 3/4	5	5 1/2	5 1/4	6	6	6 1/4	6 3/4	7	7 1/2
Diam. of Bolt Holes....."	5/8	5/8	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	1	1	1 1/8	1	1 1/4	1 1/4	1 3/8	1 3/8	1 3/8	1 1/2	1 5/8	1 3/4
Faced and Threaded...each	.95	1.00	1.10	1.25	1.40	1.60	2.00	2.25	2.40	2.65	3.30	4.40	5.10	6.30	7.40	10.75	15.00	19.00	22.25	26.00	31.00	36.00	45.00
Faced and Drilled....."	1.30	1.35	1.45	1.60	1.75	2.05	2.55	2.95	3.10	3.35	4.05	5.30	6.15	7.50	8.90	12.50	17.00	21.50	25.00	29.00	35.00	41.00	50.00
Faced, but Blind....."	.....	.....	1.65	1.90	2.10	2.40	3.00	3.35	3.60	4.00	5.00	6.60	7.65	9.50	11.00	16.00	22.50	28.50	33.50	39.00	46.00	54.00	67.00
Faced and Drilled, but Blind....."	.....	.....	2.00	2.25	2.45	2.85	3.55	4.05	4.30	4.70	5.75	7.50	8.70	10.70	12.50	17.75	24.50	31.00	36.25	42.00	50.00	59.00	72.00
Bolts for one joint, per set....."	.....	.....	.25	.25	.40	.80	.80	.80	.80	.85	1.25	1.70	1.80	2.60	3.50	5.15	6.70	8.70	8.70	10.80	18.50	23.00	.....

Furnished faced only, unless otherwise ordered.

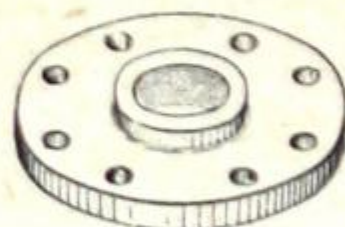
When ordering Companion Flanges, give size of tapping required first, then the outside diameter.

STEAM FITTERS' SUPPLIES**EXTRA HEAVY CAST IRON REDUCING COMPANION FLANGES**

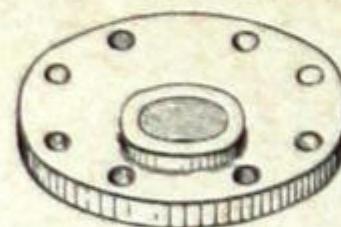
For Steam Working Pressures up to 250 pounds



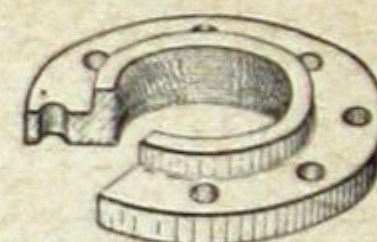
Blind Flange Drilled



Reducing Flange Drilled



Eccentric Reducing Flange Drilled



Regular Flange Drilled

Dimensions and List Prices

Outside Diameter.....Inches	6	6½	7½	8¼	9	10	10½	11	12½	14	15	16¼	17½	20½	23	24½	25½	28	30½	33	36
Size of Tapping.....Inches	1¼	1½	1½	1½	2	2	2	2	2	4½	3	4	5	6	8	8	10	12	14	16	18
" " " " " "	.....	.....	2	2	2½	2½	2½	2½	2½	5	3½	5	6	7	9	10	12	14	15	18	20
" " " " " "	.....	.....	.....	2½	3	3	3	3	3	6	4	6	7	8	10	12	14	15	16	20	.....
" " " " " "	.....	.....	.....	.....	.....	3½	3½	3½	4	.....	5	7	8	9	12	14	15	16	18	.....	.....
" " " " " "	.....	.....	.....	.....	.....	.....	4	4	4½	.....	6	8	9	10	.....	.....	.....	.....	.....	.....	.....
" " " " " "	.....	.....	.....	.....	.....	.....	.....	4½	5	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Faced only.....	1.80	2.10	2.30	2.65	3.30	3.70	4.00	4.40	5.50	7.25	8.40	10.50	12.00	17.50	25.00	31.50	37.00	43.00	51.00	60.00	74.00
Faced and Drilled.....	2.15	2.45	2.65	3.10	3.85	4.40	4.70	5.10	6.25	8.15	9.45	11.70	13.50	19.25	27.00	34.00	39.75	46.00	55.00	65.00	79.00

Furnished faced only, unless otherwise ordered.

Special Eccentric Flanges when ordered.

When ordering Companion Flanges, give size of tapping required first, then the outside diameter, and state whether eccentric or ordinary.

STEAM FITTERS' SUPPLIES **GALVANIZED MALLEABLE IRON FITTINGS**

Price List per Piece

Size.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6
Ells.....	\$0.08	\$0.09	\$0.11	\$0.14	\$0.20	\$0.32	\$0.40	\$0.60	\$0.90	\$1.50	\$2.60	\$3.75	\$5.00	.....	\$6.50	\$10.00
Reducing Ells.....	.08	.09	.11	.14	.20	.32	.40	.60	.90	1.50	2.60	3.75	5.00	.....	6.50	10.00
Right and Left Ells.....		.12	.16	.17	.23	.35	.45	.65	1.00	.....	.....	.....	.....	.....	.....	.....
45° Ells.....		.12	.15	.20	.25	.40	.50	.85	1.35	1.90	3.75	4.75	6.75	.....	9.00	11.00
Street Ells.....	.10	.12	.12	.15	.28	.35	.55	.80	1.30	2.25	3.50	.....	.....	.....	.....	.....
Side Outlet Ells.....			.10	.15	.25	.45	.65	.90	1.50	.....	.....	.....	.....	.....	.....	.....
Drop Ells, Short.....		.09	.12	.20	.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Drop Ells, Long.....			.18	.27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tees.....	.09	.10	.13	.16	.20	.38	.50	.70	1.00	1.90	3.00	4.25	5.75	.....	8.00	12.00
Reducing Tees.....	.09	.10	.13	.16	.20	.38	.50	.70	1.00	1.90	3.00	4.25	5.75	.....	8.00	12.00
Four-Way Tees.....			.17	.20	.28	.50	.70	1.10	1.75	.....	.....	.....	.....	.....	.....	.....
Drop Tees, Short.....			.15	.25	.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Drop Tees, Long.....			.17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crosses.....		.12	.14	.25	.29	.45	.60	.90	1.50	2.75	4.50	.....	8.00	.....	.....	.....
Reducing Crosses.....		.12	.14	.25	.29	.45	.60	.90	1.50	2.75	4.50	.....	8.00	.....	.....	.....
Caps.....		.04	.05	.08	.12	.17	.24	.38	.52	.76	1.30	1.60	2.00	.....	3.50	5.00
Locknuts.....		.03	.04	.05	.07	.10	.14	.20	.30	.....	.....	.....	.....	.....	.....	.....
Waste Nuts.....		.08	.10	.12	.16	.20	.30	.50	.....	.....	.....	.....	.....	.....	.....	.....
Right Couplings.....		.05	.07	.10	.17	.23	.30	.40	.55	.95	1.40	.....	.....	.....	.....	.....
Reducing Couplings.....		.08	.10	.10	.15	.25	.35	.45	.75	1.05	1.65	2.40	3.05	.....	.....	.....
Right and Left Couplings.....		.06	.09	.10	.17	.25	.35	.55	.75	1.05	1.50	.....	.....	.....	.....	.....
Close Return Bends.....				.25	.35	.55	.75	1.15	1.65	.....	.....	.....	.....	.....	.....	.....
Open Return Bends.....				.28	.45	.70	.90	1.25	2.00	3.50	5.00	.....	.....	.....	.....	.....
Crossovers.....				.25	.40	.60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Extension Pieces.....			.09	.13	.18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

BLACK MALLEABLE IRON FITTINGS

Price List per Piece

[illegible]

STEAM FITTERS' SUPPLIES

MALLEABLE IRON FITTINGS

Class	A	B	C
ELBOWS	$\frac{1}{8} \times \frac{1}{8}$ $\frac{1}{4} \times \frac{1}{8}$ $\frac{3}{8} \times \frac{1}{8}$ $\frac{1}{4}$ and $\frac{3}{8}$	$\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ $\frac{3}{8} \times \frac{1}{4}$, $\frac{1}{2} \times \frac{1}{4}$ $\frac{1}{2} \times \frac{3}{8}$ $\frac{1}{2}$, $\frac{3}{4}$ and 1 $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{3}{4}$ $\frac{3}{4} \times \frac{1}{2}$, 1 x $\frac{3}{4}$ $\frac{1}{4}$ to 2 inclusive All sizes	* $\frac{3}{4}$ and larger † $1\frac{1}{4}$ and larger 1 and larger $2\frac{1}{2}$ and larger
Elbows, R. & L..... " Street..... " 45°..... " Drop.....		$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{1}{4} \times \frac{3}{8}$ $\frac{3}{8} \times \frac{1}{4}$ x $\frac{1}{4}$, $\frac{3}{8} \times \frac{1}{4}$ $\frac{3}{8} \times \frac{1}{4} \times \frac{3}{8}$ $\frac{1}{2}$ reducing All sizes All sizes $\frac{1}{4}$ to 1 inclusive 1 and smaller $\frac{3}{8}$ to 1 $\frac{3}{4}$ and larger $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{3}{4}$ $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{3}{4}$ $\frac{3}{8} \times \frac{1}{4}$ to 1 x $\frac{3}{4}$ $\frac{1}{4}$ to 1 inclusive $\frac{1}{4}$ to $1\frac{1}{4}$ inclusive All sizes	* $\frac{3}{4}$ and larger
TEES	$\frac{1}{8} \times \frac{1}{8}$, $\frac{1}{8} \times \frac{1}{4}$ $\frac{1}{4} \times \frac{1}{8}$ $\frac{1}{2} \times \frac{1}{8}$, $\frac{3}{8} \times \frac{1}{8}$		
Tees, Drop..... Tees, 4-way..... Crosses, Straight..... " Reducing..... Return Bends..... " " R. & L..... Couplings, R. H..... " " R. & L..... " " Reducing..... Caps..... Locknuts..... Extension Pieces.....	$\frac{1}{4}$ $\frac{3}{8}$ and $\frac{1}{2}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{4} \times \frac{1}{8}$, $\frac{3}{8} \times \frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$		

*Such fittings in Class C as have one or more openings smaller than $\frac{3}{4}$ charged as Class B.

† Right and Left Elbows, Reducing Crosses, and Reducing Couplings in Class C having one or more outlets smaller than $\frac{3}{4}$ will be charged in Class B.

Price List

Class	A	B	C
Price per lb., black.....cents	40	20	12
" " galvanized..... "	50	28	19

STEAM FITTERS' SUPPLIES**PIPE HANGERS**

Sizes.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8	9	10
Exp. Ring Hangers, Complete	\$.....	\$0.17	\$0.18	\$0.19	\$0.25	\$0.29	\$0.36	\$0.44	\$0.55	\$0.63	\$0.90	\$1.12	\$1.35	\$1.80	\$2.25	.....	.....
Exp. Ring Hangers, without Plates .....		.08	.12	.15	.20	.25	.30	.40	.50	.60	.80	1.00	1.25	1.70	2.15	.....	.....
Grabler Hanger Rings .....	.14	.14	.16	.18	.20	.22	.24	.26	.30	.32	.34	.36	.40	.63	.88	.....	.....
*Grabler Extension Bar, 10 ft. lengths, per foot .....	.08	.08	.08	.08	.08	.09	.09	.09	.10	.10	.10	.10	.10	.20	.20	.28	.28
Ring Stays, short, black..... per 100	5.00	5.80	6.75	7.50	10.00	14.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" short, galvanized..... "	6.50	7.00	8.00	9.00	12.00	16.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" long, black..... "	6.50	8.00	10.00	12.00	15.00	20.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" long, galvanized..... "	8.00	10.00	12.00	14.00	18.00	24.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* $\frac{7}{8}$ in. Grabler Extension Bar used on Hangers up to $1\frac{1}{2}$ inch. 1 in. Bar on Hangers 2 to 3 in. $1\frac{1}{8}$ in. Bar on Hangers $3\frac{1}{2}$ to 6 in.
 $1\frac{1}{4}$ in. Bar on Hangers 7 to 8 in. $1\frac{1}{2}$ in. Bar on Hangers 9 and 10 in.

HOOK AND RING PLATES

Number of Branches.....	1	2	3	4	5	6	7	8	9	10	11	12
Hook Plates												
1 in. pipe, $2\frac{1}{2}$ in. centre to centre	\$0.09	\$0.18	\$0.23	\$0.26	\$0.32	\$0.38	\$0.48	\$0.59	\$0.65	\$0.75	\$0.85	\$1.00
$1\frac{1}{4}$ " 3 " " .....	.10	.21	.27	.32	.41	.52	.68	.80	.90	1.00	1.35	1.40
$1\frac{1}{2}$ " $3\frac{1}{2}$ " " .....	.15	.28	.43	.58	.72	.88	1.10	1.25	1.40	1.55	1.65	1.90
2 " $4\frac{1}{2}$ " " .....	.22	.43	.65	.90	1.15	1.35	.....	.....	.....	.....	.....	.....
Ring Plates												
1 in. pipe, $2\frac{1}{2}$ in. centre to centre .....	.16	.28	.41	.50	.62	.72	.96	1.00	.....	.....	.....	.....
$1\frac{1}{4}$ " 3 " " .....	.21	.35	.50	.62	.75	1.10	1.25	1.40	.....	.....	.....	.....

GRABLER STEEL HOOK PLATES

Size.....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Number of Hooks.....	30	30	25	20
Price.....	\$2.50	\$3.25	\$3.75	\$4.25

STEAM FITTERS' SUPPLIES

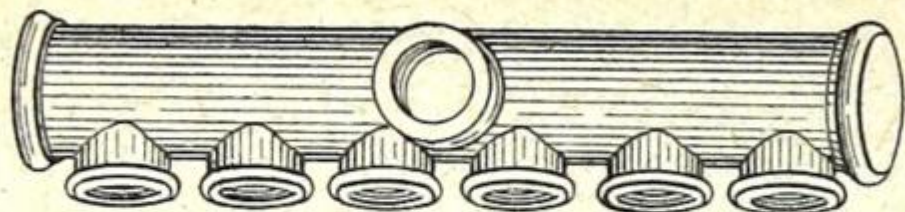
UNIONS

Black and Galvanized Union

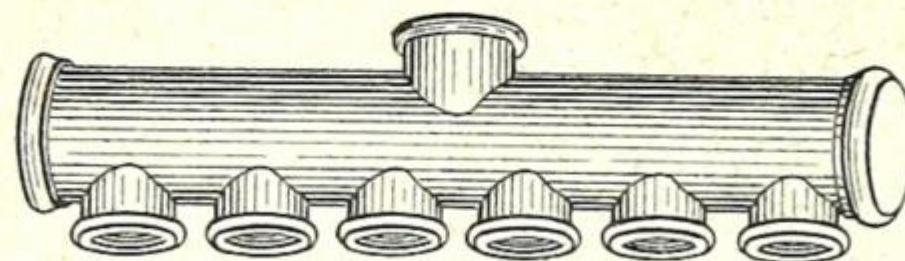
Size	$\frac{1}{4}$		$\frac{3}{8}$		$\frac{1}{2}$		$\frac{3}{4}$		1		$1\frac{1}{4}$		$1\frac{1}{2}$		2		$2\frac{1}{2}$		3	
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Lip.....	.18	.27	.20	.30	.22	.33	.27	.40	.33	.50	.46	.70	.58	.90	.75	1.15	1.55	2.35	2.10	3.15
Kewanee.....	.19	.23	.22	.26	.27	.34	.40	.49	.48	.60	.66	.82	.80	1.10	1.14	1.40	2.10	2.75	2.65	3.50
Dart.....	.30	.45	.40	.60	.50	.75	.60	.90	.80	1.20	1.20	1.80	1.60	2.40	2.00	3.00	3.20	4.80	4.80	7.20

Flange Unions

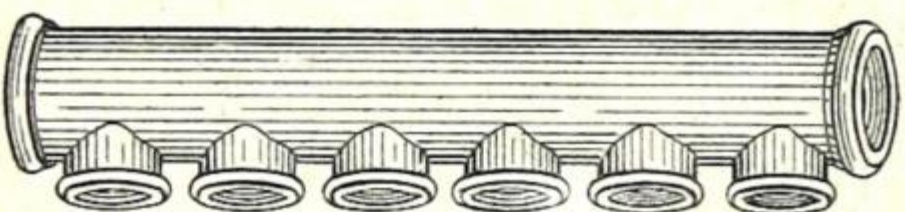
Size	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8	10	12
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Standard.....	.52	.64	.78	1.00	1.25	1.50	1.80	2.10	2.70	3.15	3.95	5.50	7.00	11.50	16.00
Dart.....	.80	1.20	1.60	2.00	3.20	4.80	6.00	7.50	8.75	10.00	12.50	15.00	18.00	28.80	.....



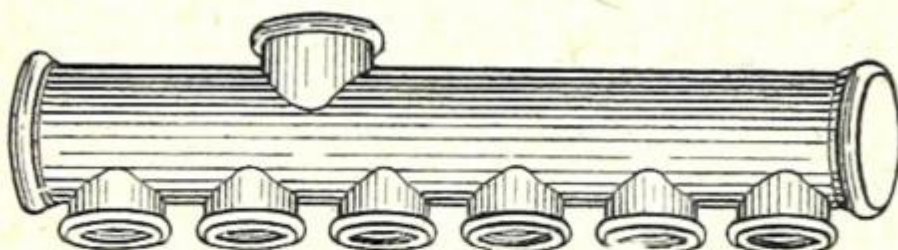
A. Side feed in centre



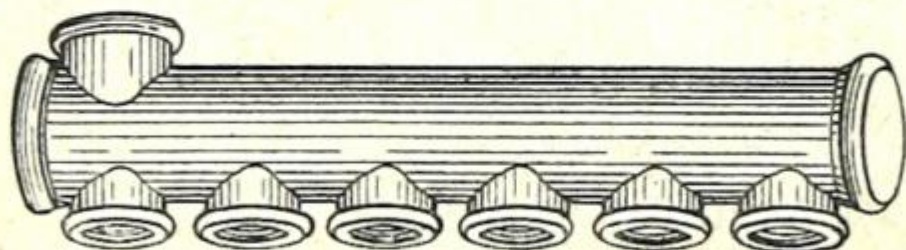
B. Back feed in centre



C. End feed



D. Back feed



E. Back feed near end

STEAM FITTERS' SUPPLIES

BRANCH TEES OR HEADERS

Branch Tees for Box Coils are always tapped right hand in branches and right hand in back inlet, unless otherwise ordered.

The end and back opening of Branch Tees are tapped the same size as branches, unless otherwise ordered.

No. of Branches	1 in. Branch Tees			1¼ in. Branch Tees			1½ in. Branch Tees			2 in. Branch Tees		
	2½ in. Centre to Centre			3 in. Centre to Centre			3½ in. Centre to Centre			4½ in. Centre to Centre		
	1 in. or 1¼ in. Run	1½ in. Run	2 in. Run	1¼ in. or 1½ in. Run	2 in. Run	2½ in. Run	1½ in. or 2 in. Run	2½ in. Run	3 in. Run	2 in. Run	2½ in. or 3 in. Run	3½ in. Run
2	\$0.90	\$1.00	\$1.15	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	1.05	1.15	1.35	\$1.65	\$1.90	\$2.40	\$2.70	\$3.45	\$3.80	\$5.25	\$5.75	\$6.25
4	1.15	1.30	1.60	2.00	2.40	2.85	3.35	4.15	4.60	6.40	7.00	7.75
5	1.35	1.45	1.85	2.40	2.90	3.55	4.00	5.00	5.50	7.65	8.50	9.25
6	1.60	1.75	2.10	2.80	3.30	3.95	4.65	5.75	6.25	8.80	9.75	10.75
7	1.90	2.20	2.45	3.20	3.90	4.20	5.25	6.50	7.25	10.60	11.75	13.00
8	2.20	2.45	2.75	3.60	4.50	4.95	5.85	7.00	7.75	11.50	12.75	14.00
9	2.65	2.90	3.40	4.30	5.25	6.15	6.50	8.25	9.00	12.25	13.50	15.00
10	.....	3.30	4.00	4.80	5.85	6.85	7.60	9.25	10.00	13.50	15.00	16.50
11	.....	4.50	4.80	5.00	6.25	7.25	8.00	9.75	10.75	.....	.....	.....
12	.....	4.75	5.10	5.25	6.50	7.65	8.50	10.50	11.50	.....	.....	.....
13	.....	5.50	6.00	6.00	7.00	8.25	.....	.....	.....	.....	.....	.....
14	.....	7.00	7.25	6.75	7.75	9.00	.....	.....	.....	.....	.....	.....
15	.....	7.50	7.75	7.50	8.50	9.75	.....	.....	.....	.....	.....	.....
16	.....	8.00	8.25	8.50	9.50	10.75	.....	.....	.....	.....	.....	.....

1 inch Branch Tees, 1 inch or 1¼ inch run, are 1¾ inches inside diameter.

1 inch Branch Tees, 1½ inch or 2 inch run, are 2¼ inches inside diameter.

1¼ inch Branch Tees are all 2½ inches inside diameter.

1½ inch Branch Tees are all 2¾ inches inside diameter.

2 inch Branch Tees are all 3½ inches inside diameter.

When more than one feed is required, same will be charged as an extra outlet. Back or side outlets charged as an extra outlet.

In ordering please state whether header is to be made as per A, B, C D or E.

STEAM FITTERS' SUPPLIES**WROUGHT IRON NIPPLES****Black Iron—Right Hand**

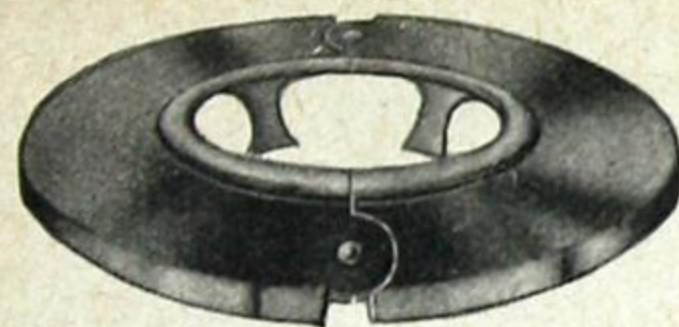
Length in Inches						Size, Inches	Prices		Price of Extra Long Nipples								
Close	Short	Long					Close or Short	Long	Length in Inches								
									4	5	6	7	8	9	10	11	12
$\frac{3}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$\frac{1}{8}$	\$0.04	\$0.06	\$0.07	\$0.08	\$0.10	\$0.12	\$0.14	\$0.15	\$0.17	\$ 0.18	\$ 0.19
$\frac{7}{8}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$\frac{1}{4}$	.04	.06	.07	.08	.10	.12	.14	.15	.17	.18	.19
1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$\frac{3}{8}$	.04	.06	.07	.08	.10	.12	.14	.15	.17	.18	.19
$1\frac{1}{8}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$\frac{1}{2}$	.05	.07	.08	.10	.12	.14	.16	.18	.20	.22	.23
$1\frac{3}{8}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$\frac{3}{4}$	.06	.09	.....	.11	.13	.17	.18	.20	.22	.24	.26
$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	1	.08	.13	.....	.15	.18	.23	.25	.28	.31	.34	.36
$1\frac{5}{8}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	$1\frac{1}{4}$	.11	.17	.....	.20	.24	.29	.33	.36	.40	.44	.47
$1\frac{3}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	$1\frac{1}{2}$	.13	.20	.....	.25	.29	.36	.40	.45	.50	.54	.59
2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	2	.18	.27	.....	.32	.38	.50	.54	.59	.65	.72	.77
$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	$2\frac{1}{2}$	.39	.59	.....	.....	.68	.90	.97	1.06	1.17	1.26	1.35
$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	3	.48	.72	.....	.....	.85	1.08	1.20	1.33	1.45	1.58	1.70
$2\frac{3}{4}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	$3\frac{1}{2}$	.75	1.05	.....	.....	.....	1.30	1.45	1.60	1.75	1.90	2.05
3	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	4	.85	1.20	.....	.....	.....	1.52	1.69	1.87	2.05	2.22	2.40
3	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	$4\frac{1}{2}$	1.25	1.70	.....	.....	.....	2.25	2.50	2.75	2.95	3.17	3.40
$3\frac{1}{4}$	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	$6\frac{1}{2}$	5	1.55	2.45	.....	.....	.....	2.58	2.83	3.10	3.35	3.60	3.85
$3\frac{1}{4}$	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	$6\frac{1}{2}$	6	1.85	2.90	.....	.....	.....	3.05	3.35	3.70	4.00	4.30	4.65
$3\frac{1}{2}$	5	.....	.....	.....	.....	7	3.20	.....	.....	.....	3.60	4.05	4.45	4.90	5.30	5.75	6.15
$3\frac{1}{2}$	5	.....	.....	.....	.....	8	3.55	.....	.....	.....	4.05	4.55	5.05	5.50	6.00	6.50	7.00
4	5	.....	.....	.....	.....	9	5.25	.....	.....	.....	.....	.....	6.50	7.10	7.75	8.40	9.00
4	5	.....	.....	.....	.....	10	6.75	.....	.....	.....	.....	.....	8.25	8.90	9.70	10.40	11.15
4	5	.....	.....	.....	.....	12	8.00	.....	.....	.....	.....	.....	10.00	10.80	11.75	12.70	13.65

STEAM FITTERS' SUPPLIES

WROUGHT IRON NIPPLES

Galvanized—Right and Left

Length in Inches						Size, Inches	Prices		Price of Extra Long Nipples								
									Length in Inches								
Close	Short	Long					Close or Short	Long	4	5	6	7	8	9	10	11	12
$\frac{3}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$\frac{1}{8}$	\$0.08	\$0.13	\$0.15	\$0.18	\$0.21	\$0.26	\$0.29	\$0.32	\$0.37	\$0.40	\$0.43
$\frac{7}{8}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$\frac{1}{4}$	.08	.13	.15	.18	.21	.26	.29	.32	.37	.40	.43
1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$\frac{3}{8}$	.08	.13	.15	.18	.21	.26	.29	.32	.37	.40	.43
$1\frac{1}{8}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$\frac{1}{2}$	.11	.16	.18	.21	.26	.29	.34	.38	.43	.46	.50
$1\frac{3}{8}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$\frac{3}{4}$	.13	.19	.....	.24	.27	.37	.40	.43	.46	.51	.56
$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	1	.18	.29	.....	.32	.38	.50	.53	.59	.66	.72	.77
$1\frac{5}{8}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	$1\frac{1}{4}$	.24	.37	.....	.43	.51	.62	.72	.80	.88	.96	1.04
$1\frac{3}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	$1\frac{1}{2}$	.29	.43	.....	.54	.62	.77	.83	.96	1.07	1.15	1.28
2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	2	.39	.57	.....	.69	.82	1.07	1.15	1.28	1.39	1.54	1.65
$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	$2\frac{1}{2}$	.83	1.25	.....	.....	1.46	1.92	2.08	2.24	2.48	2.69	2.88
$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	3	1.04	1.54	.....	.....	1.81	2.30	2.56	2.83	3.09	3.36	3.63
$2\frac{3}{4}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	$3\frac{1}{2}$	1.60	2.24	.....	.....	.....	2.80	3.12	3.44	3.76	4.08	4.40
3	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	4	1.84	2.56	.....	.....	.....	3.20	3.60	4.00	4.40	4.80	5.20



STEAM FITTERS' SUPPLIES

FLOOR AND CEILING PLATES

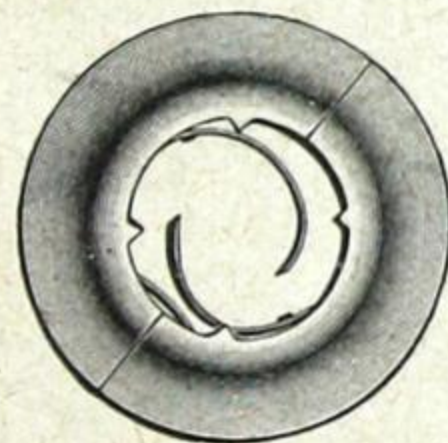
AJAX

Heavy Stamped Steel Adjustable Floor and Ceiling Plates

Handsome in Design and Substantially Constructed.



Size, inches.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Black.....	.14	.14	.15	.16	.17	.20	.22	.25	.30	.50	.65
Nickel Plated.....	.25	.25	.26	.27	.28	.32	.35	.38	.45	.65	.80



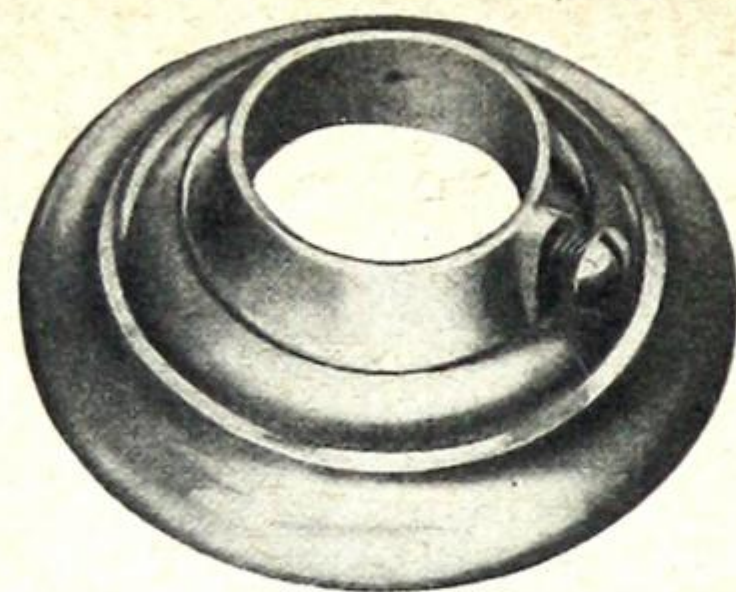
MODEL

Adjustable Cast Iron Floor and Ceiling Plate, Two-Piece

Plain Iron or Nickel Plated



Size, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Plain.....	.16	.17	.20	.22	.25	.30	.50	.65
Nickel Plated.....	.27	.28	.32	.35	.38	.45	.65	.80



STEAM FITTERS' SUPPLIES

FLOOR AND CEILING PLATES


D. R. Co.

Special Pattern Cast Iron Ceiling Plates

Plain Iron or Nickel Plated

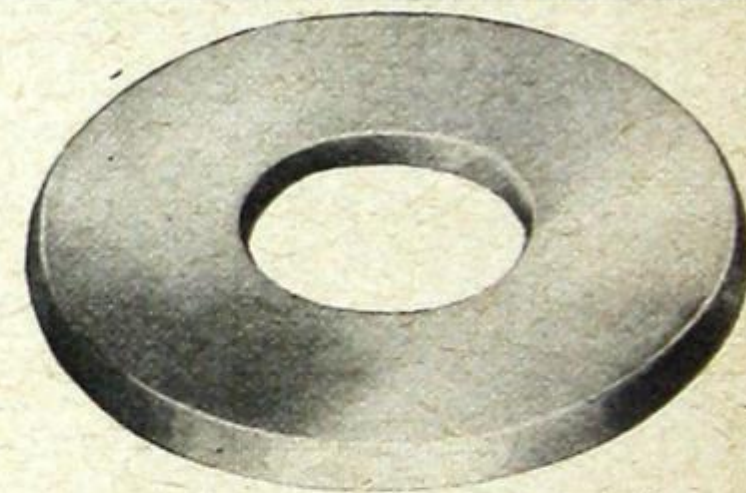
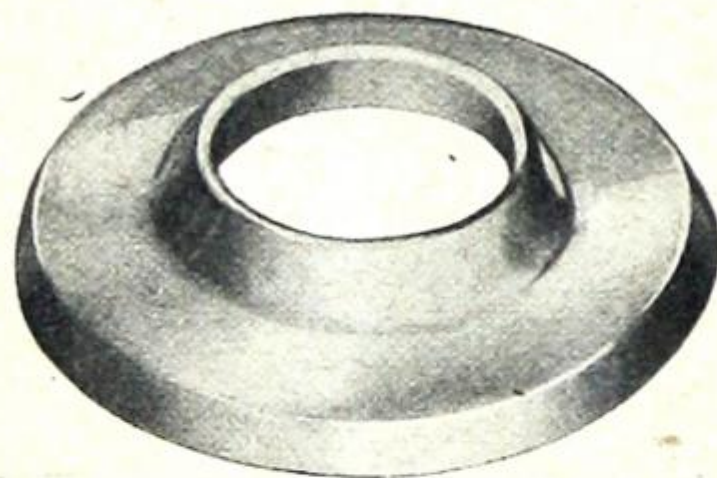


Sizes, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Plain.....	.11	.13	.16	.18	.23	.27	.36	.50	.55	.68
Nickel Plated.....	.14	.17	.20	.23	.30	.35	.46	.65	.85	.95

 D. R. Co.

Special Pattern Cast Iron Floor Plates

Plain Iron or Nickel Plated



Sizes, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Plain.....	.06	.06	.08	.11	.14	.16	.24	.30	.35	.42
Nickel Plated.....	.12	.12	.14	.18	.22	.26	.35	.45	.55	.65

STEAM FITTERS' SUPPLIES

FLOOR AND CEILING PLATES

Below we list other styles of Floor and Ceiling Plates stocked by us.

Sizes, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Spun Brass Floor.....Plated..	.14	.14	.18	.22	.30	.35	.42	.55	...	...
Spun Brass Ceiling with Set Screw,Plated..	.22	.24	.26	.32	.38	.46	.60	.80	...	...
Grabler Floor.....Plated..	.27	.28	.32	.35	.38	.45	.65	.80	...	...
Grabler Ceiling.....Plated..	.27	.28	.32	.35	.38	.45	.65	.80	...	...
C. I. Double Floor.....Plain...	...	.15	.15	.15	.15	...	...	...	...	...
C. I. Double Floor.....Plated..	...	.30	.30	.30	.30	...	...	...	...	...

CAST IRON FLOOR FLANGES

Size, Inches	Price, Each	Size, Inches	Price, Each	Size, Inches	Price, Each
$\frac{1}{4}$ x $2\frac{1}{2}$	*\$0.10	$2\frac{1}{2}$ x $6\frac{1}{2}$	*\$.50	8 x $13\frac{1}{2}$	\$ 2.80
$\frac{3}{8}$ x 3	* .10	3 x $7\frac{1}{2}$	0.75	9 x 15	4.00
$\frac{1}{2}$ x $3\frac{1}{2}$	* .15	$3\frac{1}{2}$ x $8\frac{1}{2}$	1.00	10 x 16	5.00
$\frac{3}{4}$ x $3\frac{1}{2}$	* .15	4 x 9	1.15	12 x 19	7.50
1 x 4	* .16	$4\frac{1}{2}$ x $9\frac{1}{4}$	1.25	14 x 21	9.50
$1\frac{1}{4}$ x 4	* .16	5 x 10	1.50	15 x $22\frac{1}{4}$	14.00
$1\frac{1}{2}$ x $4\frac{1}{2}$	* .22	6 x 11	1.75	16 x $23\frac{1}{2}$	18.00
2 x $5\frac{1}{2}$	* .35	7 x $12\frac{1}{2}$	2.20		

Those marked * are Floor Flanges, drilled for screw.

The above is considered a complete list. Other sizes made to order.

STEAM FITTERS' SUPPLIES**EXPANSION TANKS**

Our Expansion Tanks are thoroughly galvanized both inside and outside. Unless otherwise specified, the vent expansion pipe and water supply openings are all tapped for 1" dia. pipe connections. The water gauge openings are $\frac{1}{2}$ " pipe-size, and spaced 12" centres.

List Price—Complete with Gauge Glasses and Mountings

Size	Capacity U. S. Gallons	Sq. Ft. Radiation	Price of Tank	Price of Trimming
12 x 24	12	500	\$4.00	\$1.10
12 x 30	15	800	4.50	1.10
14 x 30	20	1200	5.00	1.10

Brass Mountings only, without glass.....per set \$1.00

GAUGE GLASSES

	$\frac{5}{8}$ x 12	$\frac{5}{8}$ x 14	$\frac{5}{8}$ x 16	$\frac{5}{8}$ x 18
Per dozen.....	\$1.00	\$1.25	\$1.50	\$2.00

AUTOMATIC EXPANSION TANKS

Can be used on any hot water job containing up to 3000 feet of radiation.

8 x 17 x 10 Plain Oak, Copper Lined.....	\$10.75
9 x 20 x 10 Plain Oak, Copper Lined.....	11.25
11 x 20 x 10 Cast Iron.....	13.50

STEAM FITTERS' SUPPLIES**COVERINGS**

**Moulded Asbestos, Air—Cell, and Mineral Wool
Sectional Pipe Coverings and Fittings**

Standard Thicknesses
PRICE LIST

Inside Diam. of Pipe Inches	Price per Lineal Foot	Elbows	Tees	Crosses	Globe Valves	Flange Covers
$\frac{1}{2}$	\$0.22	\$0.30	\$0.36	\$0.48	\$0.54	\$0.50
$\frac{3}{4}$	.24	.30	.36	.48	.54	.50
1	.27	.30	.36	.48	.54	.50
$1\frac{1}{4}$	.30	.30	.36	.48	.54	.50
$1\frac{1}{2}$	.33	.30	.36	.48	.54	.50
2	.36	.36	.42	.54	.60	.60
$2\frac{1}{2}$	.40	.42	.48	.60	.78	.70
3	.45	.48	.54	.70	.96	.80
$3\frac{1}{2}$	.50	.54	.60	.80	1.20	.90
4	.60	.60	.75	.95	1.50	1.00
$4\frac{1}{2}$	.65	.72	.90	1.10	1.85	1.30
5	.70	.90	1.20	1.50	2.25	1.60
6	.80	1.30	1.60	2.00	2.80	1.90
7	1.00	1.80	2.20	2.80	3.60	2.20
8	1.10	2.40	3.00	3.60	4.40	2.50
9	1.20	3.00	3.80	4.40	5.30	2.90
10	1.30	3.60	4.60	5.20	6.20	3.30
12	1.85					

All pipe coverings are supplied in sections three feet long, canvassed and with brass bands. For irregular flanges or fittings larger than 10 in. use Asbestos Cement or Asbestos Cement Felting.

ASBESTOS CEMENT

Asbestos Cement, per 100 lb. bag \$2.50

MINERAL WOOL

Mineral Wool, per 50 lb. bag \$5.00

ASBESTOS SHEATHING

Asbestos Sheathing, per 100 sq. ft. \$10.00

HAIR FELT

In Rolls containing 300 square feet.

$\frac{1}{2}$ inch	\$12.00	per 100 square feet
$\frac{3}{4}$ "	14.00	" " "
1 "	16.00	" " "

STEAM FITTERS' SUPPLIES**THERMOMETERS AND GAUGES****HOT WATER THERMOMETERS**

N. P. Hot Water Thermometer, straight, each.....	\$ 2.00
N. P. Hot Water Thermometer, angle, each.....	2.50
N. P. Hot Water Thermometer, four inch circular dial, 50° to 250° each.....	10.00

ALTITUDE GAUGES

N. P. Altitude Gauge, with five inch dial, iron case, brass rim, each.....	3.00
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HIGH OR LOW PRESSURE STEAM GAUGES

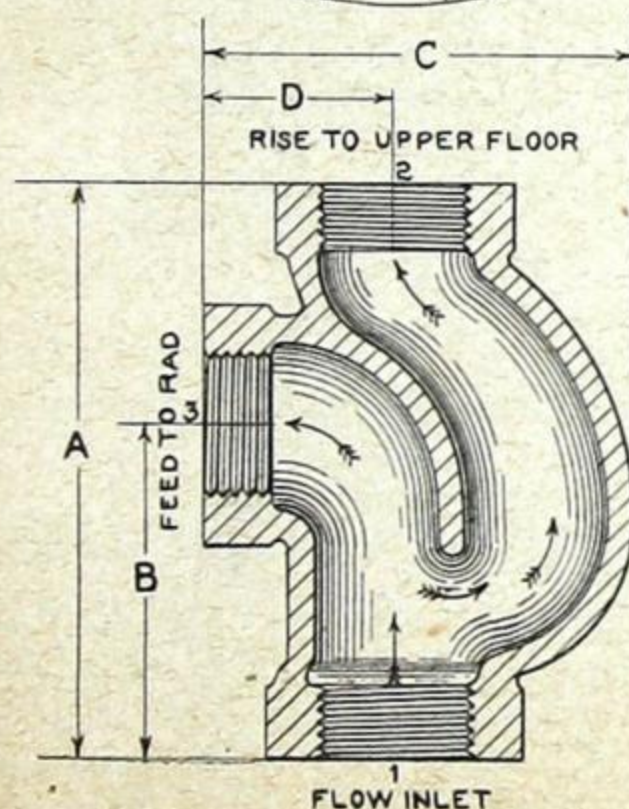
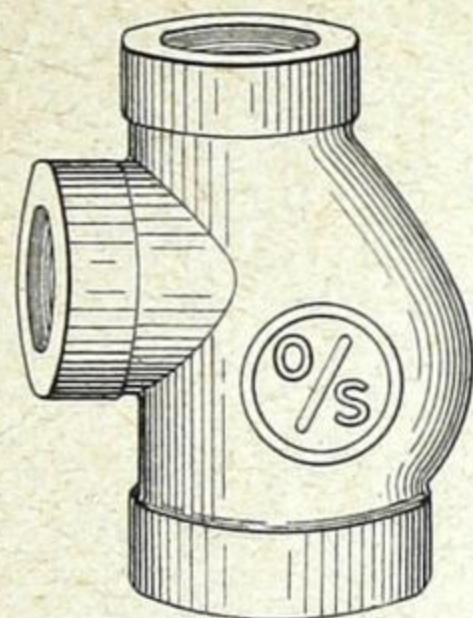
High or Low Pressure Steam Gauge, with five inch dial, iron case, N.P. rim, each.....	3.00
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SYPHON FOR STEAM GAUGES

Size of Iron Pipe.....	Inch	
Price, length 8 inches.....	Each	\$0.50 ^{1/4}

PRESSURE AND VACUUM GAUGE

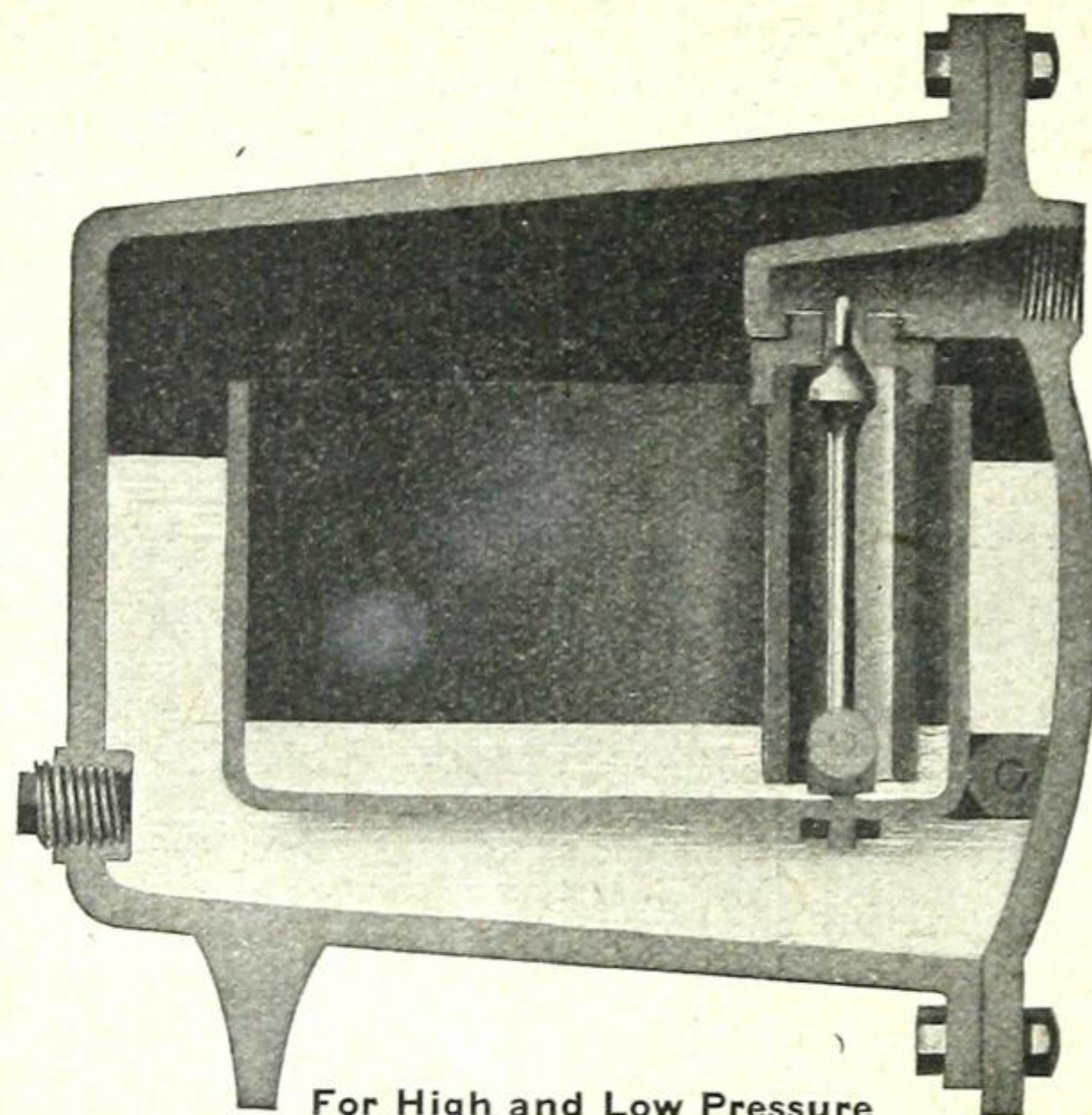
Combination Pressure and Vacuum Gauge, with five inch, dial, iron case, brass rim, each.....	10.00
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STEAM FITTERS' SUPPLIES**O. S. DISTRIBUTOR FITTINGS****PRICE LIST AND DIMENSIONS**

Stock No.	Tappings, inches 1 | 2 | 3	Dimensions, inches				List Price Each
		A	B	C	D	
605	$\frac{3}{4}$ x $\frac{1}{2}$ x $\frac{1}{2}$	$2\frac{3}{4}$	$1\frac{1}{2}$	$2\frac{1}{4}$	$1\frac{1}{4}$	\$0.50
606	$\frac{3}{4}$ x $\frac{3}{4}$ x $\frac{1}{2}$	$2\frac{11}{16}$	$1\frac{3}{8}$	$2\frac{1}{8}$	$1\frac{3}{16}$	.50
607	$\frac{3}{4}$ x $\frac{1}{2}$ x $\frac{3}{4}$	$2\frac{13}{16}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$1\frac{1}{4}$	.50
608	1 x $\frac{1}{2}$ x $\frac{3}{4}$	$3\frac{3}{8}$	2	$2\frac{15}{16}$	$1\frac{3}{8}$	.60
609	1 x $\frac{3}{4}$ x $\frac{1}{2}$	$3\frac{3}{8}$	2	$2\frac{13}{16}$	$1\frac{5}{16}$	.60
610	1 x $\frac{3}{4}$ x $\frac{3}{4}$	$3\frac{5}{8}$	2	$2\frac{3}{4}$	$1\frac{3}{8}$	.60
611	1 x $\frac{3}{4}$ x 1	$3\frac{3}{4}$	2	$2\frac{3}{4}$	$1\frac{1}{2}$	.60
612	1 x 1 x $\frac{3}{4}$	$3\frac{3}{4}$	2	$2\frac{3}{4}$	$1\frac{3}{8}$	.60
613	1 x 1 x 1	4	$2\frac{1}{4}$	3	$1\frac{1}{2}$	.60
614	$1\frac{1}{4}$ x 1 x 1	$4\frac{3}{8}$	$2\frac{3}{8}$	$3\frac{5}{8}$	2	.80
615	$1\frac{1}{4}$ x 1 x $1\frac{1}{4}$	$4\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{3}{4}$	2	.80
616	$1\frac{1}{4}$ x $1\frac{1}{4}$ x 1	$4\frac{3}{8}$	$2\frac{3}{8}$	$3\frac{1}{2}$	2	.80
617	$1\frac{1}{4}$ x $1\frac{1}{4}$ x $1\frac{1}{4}$	5	$2\frac{3}{4}$	$3\frac{7}{8}$	2	.80
618	$1\frac{1}{2}$ x $1\frac{1}{4}$ x 1	$4\frac{1}{2}$	$2\frac{3}{8}$	$3\frac{3}{4}$	$1\frac{7}{8}$	.90
619	$1\frac{1}{2}$ x 1 x $1\frac{1}{4}$	$4\frac{3}{4}$	$2\frac{5}{8}$	4	$2\frac{1}{4}$	.90
620	$1\frac{1}{2}$ x $1\frac{1}{4}$ x $1\frac{1}{4}$	$4\frac{5}{8}$	$2\frac{3}{8}$	4	$2\frac{1}{4}$	.90
621	$1\frac{1}{2}$ x $1\frac{1}{4}$ x $1\frac{1}{2}$	$4\frac{3}{4}$	$2\frac{1}{2}$	$3\frac{7}{8}$	2	.90
622	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $1\frac{1}{4}$	$4\frac{3}{4}$	$2\frac{1}{2}$	$3\frac{3}{4}$	$1\frac{7}{8}$	.90
623	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $1\frac{1}{2}$	$5\frac{1}{8}$	$2\frac{3}{4}$	$4\frac{1}{4}$	$2\frac{1}{4}$	.90
624	2 x $1\frac{1}{4}$ x $1\frac{1}{2}$	$4\frac{3}{4}$	$2\frac{1}{8}$	$4\frac{1}{4}$	$2\frac{1}{4}$	1.20
625	2 x $1\frac{1}{2}$ x $1\frac{1}{4}$	$4\frac{3}{4}$	$2\frac{1}{8}$	$4\frac{3}{8}$	$2\frac{1}{4}$	1.20
626	2 x $1\frac{1}{2}$ x $1\frac{1}{2}$	5	$2\frac{1}{8}$	$4\frac{1}{2}$	$2\frac{1}{4}$	1.20
627	2 x 2 x $1\frac{1}{4}$	$4\frac{7}{8}$	$2\frac{1}{2}$	$4\frac{1}{2}$	$2\frac{1}{4}$	1.20
628	2 x 2 x $1\frac{1}{2}$	$5\frac{1}{4}$	$2\frac{1}{8}$	$4\frac{1}{2}$	$2\frac{1}{4}$	1.20
629	2 x 2 x 2	$5\frac{5}{8}$	$2\frac{7}{8}$	$4\frac{3}{4}$	$2\frac{3}{8}$	1.20
630	$2\frac{1}{2}$ x $1\frac{1}{2}$ x $1\frac{1}{2}$	$5\frac{1}{4}$	$2\frac{7}{8}$	$4\frac{7}{8}$	$2\frac{1}{2}$	2.00
631	$2\frac{1}{2}$ x 2 x $1\frac{1}{2}$	$5\frac{5}{8}$	$3\frac{1}{8}$	$5\frac{3}{8}$	$2\frac{1}{2}$	2.00
632	$2\frac{1}{2}$ x 2 x 2	$5\frac{7}{8}$	$3\frac{1}{8}$	$5\frac{1}{4}$	$2\frac{5}{8}$	2.00

Positions of tappings are indicated by figures 1, 2, 3.

Order by number.

STEAM FITTERS' SUPPLIES**KIELEY STANDARD STEAM TRAPS****For High and Low Pressure**

Number.....	1	2	3	4	5	6	7
Size Inlet.....	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Size Outlet.....	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
No. lineal ft. 1 in. pipe will drain...	4,000	6,000	10,000	15,000	25,000	35,000	50,000
Price each.....\$	25.00	35.00	45.00	60.00	80.00	100.00	125.00

KIELEY PRESSURE REGULATING VALVES

Size Inches	Price Each	Size Inches	Price Each	Size Inches	Price Each	Size Inches	Price Each
$\frac{3}{4}$	\$20.00	2	\$44.00	4	\$100.00	8	\$275.00
1	22.00	$2\frac{1}{2}$	57.00	5	135.00	9	350.00
$1\frac{1}{4}$	28.00	3	72.00	6	180.00	10	350.00
$1\frac{1}{2}$	35.00	$3\frac{1}{2}$	85.00	7	225.00	12	470.00
1 x2	33.00	2 x4	72.00	4x6	140.00	6x12	325.00
$1\frac{1}{4}$ x $2\frac{1}{2}$	42.50	$2\frac{1}{2}$ x5	96.00	4x8	187.50	8x14	400.00
$1\frac{1}{2}$ x3	53.50	3 x6	126.00	5x10	242.00	8x16	500.00

This valve can be made with the inlet and outlet end of different sizes than specified above. Prices on application.

We construct to order valves of larger sizes; also for higher initial pressures, or to meet special conditions. Price on application.

In ordering it is especially important that you state clearly the pressure desired to be reduced from and to what.

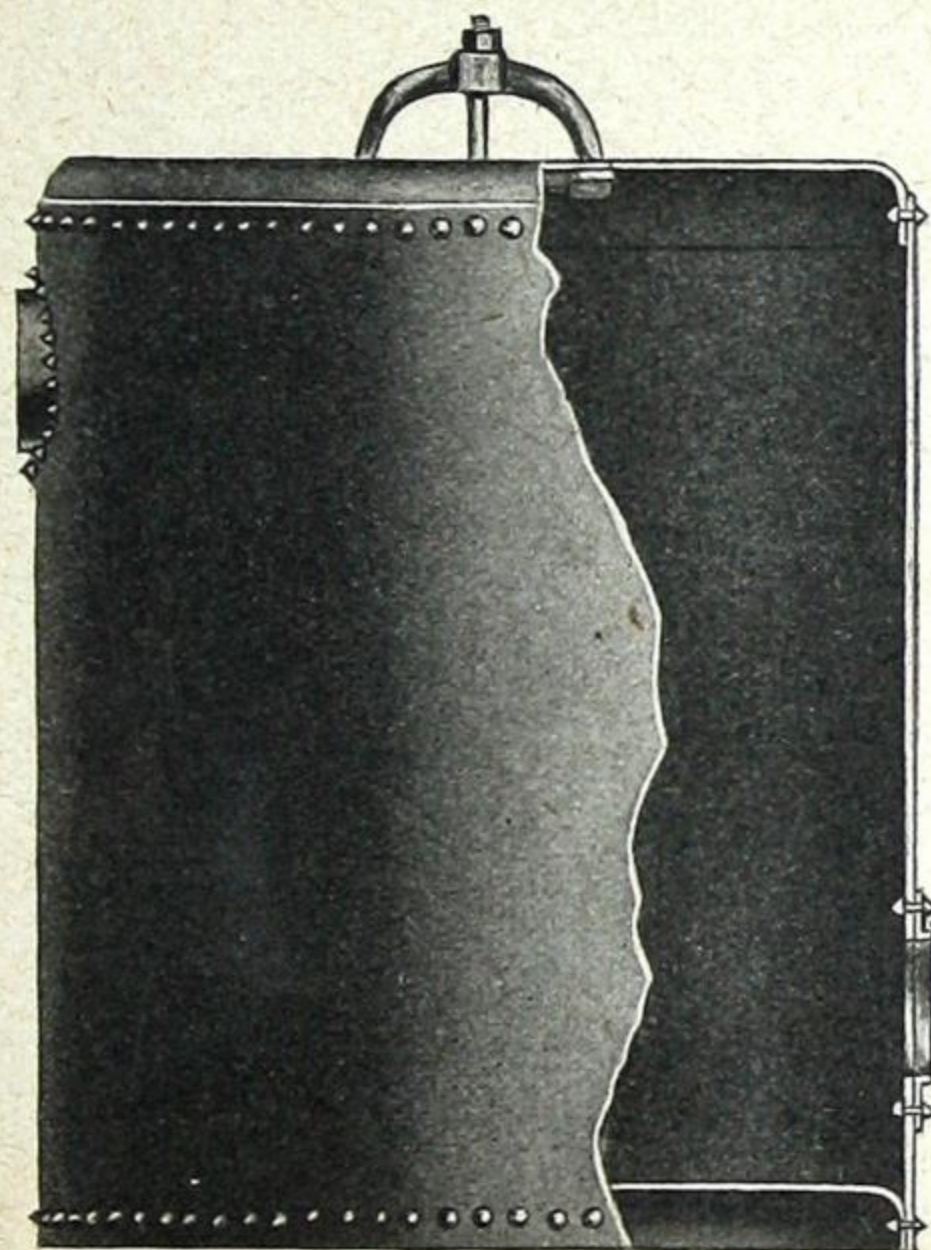
Weights and instruction given on application.

BACK PRESSURE VALVES

Size, inches	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Standard, screwed...	11.00	13.00	15.00	19.00	22.50	28.50	33.50	43.00
" flanged....			17.50	22.00	26.00	32.00	37.00	47.00
Kieley.....	20.00	24.00	30.00	35.00	40.00	45.00	55.00	75.00

STEAM FITTERS' SUPPLIES

GRAVEL BASINS AND BLOW-OFF RECEIVERS



PRICE LIST

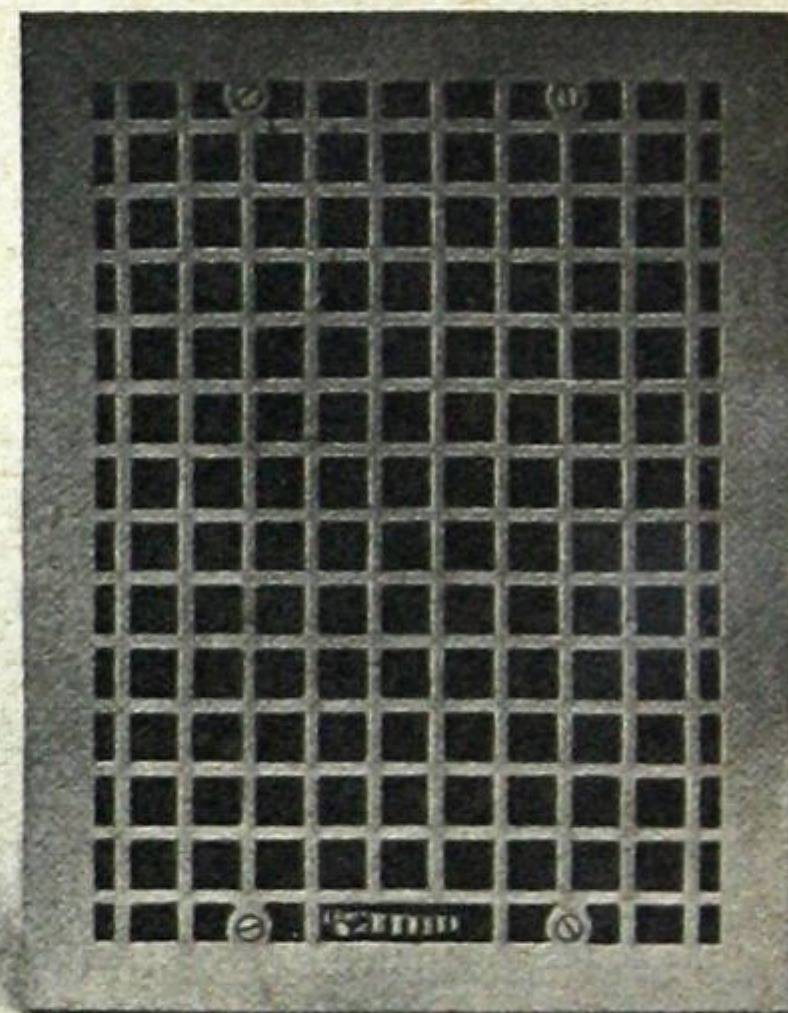
Diam. Inches	Height Inches	Thick- ness of shell Inches	Thickness of Heads Inches	Capacity Gallons	Weight Pounds	Price with Manhole and Two Flanges
20	24	$\frac{1}{4}$	5-16	34	360	\$50.00
24	24	$\frac{1}{4}$	5-16	47	400	55.00
30	24	$\frac{1}{4}$	5-16	73	500	60.00
30	30	$\frac{1}{4}$	5-16	90	550	65.00
36	30	$\frac{1}{4}$	5-16	130	680	70.00
36	36	$\frac{1}{4}$	5-16	160	740	76.00
36	48	$\frac{1}{4}$	5-16	210	850	82.00

Flanges of any size required and located to suit purchaser. If hand-hole is used instead of manhole, deduct \$2.50, net.

STEAM FITTERS' SUPPLIES**REGISTERS AND VENTILATORS****Registers, Faces, Borders, for either Floor or Wall****LIST PRICES, BLACK JAPANNED**

Size of Opening	Register	Register Face	Floor Border	Size of Opening	Register	Register Face	Floor Border
8x 8	\$ 1.60	\$ 1.05	\$ 1.20	16x32	\$31.00	\$13.10	\$13.10
8x10	1.65	1.10	1.25	16x36	36.00	16.00	16.00
8x12	1.90	1.30	1.50	18x18	18.50	7.20	7.20
9x12	2.10	1.45	1.65	18x21	20.50	7.75	7.75
10x10	2.35	1.65	1.70	18x24	21.50	8.35	8.35
10x12	2.40	1.70	1.75	18x27	27.50	10.75	10.75
10x14	3.15	2.20	2.20	18x30	31.25	13.25	13.25
10x16	4.85	2.95	2.95	18x36	38.00	17.25	17.25
10x18	6.70	3.70	3.70	20x20	19.75	8.00	8.00
10x20	8.90	4.35	4.35	20x22	21.60	8.40	8.40
10x22	10.40	4.90	4.90	20x24	22.00	8.60	8.60
10x24	12.15	5.35	5.35	20x26	23.50	9.50	9.50
12x12	4.00	2.70	2.70	20x28	28.90	11.50	11.50
12x14	4.35	2.80	2.80	20x30	33.50	13.50	13.50
12x15	4.50	2.90	2.90	20x32	37.50	17.10	17.10
12x16	5.60	3.50	3.50	20x36	43.00	18.50	18.50
12x18	6.80	3.90	3.90	24x24	30.00	12.00	12.00
12x24	12.25	5.50	5.50	24x27	33.95	14.00	14.00
14x14	7.90	4.05	4.05	24x30	38.00	17.25	17.25
14x16	8.50	4.30	4.30	24x32	42.50	18.00	18.00
14x18	9.00	4.50	4.50	24x36	50.00	22.00	22.00
14x20	9.50	4.80	4.80	24x45	67.50	28.50	28.50
14x22	10.50	5.00	5.00	27x27	37.25	17.00	17.00
16x16	11.00	5.10	5.10	27x38	56.00	25.00	25.00
16x18	12.00	5.30	5.30	28x28	44.00	19.00	19.00
16x20	12.35	6.10	6.10	28x30	48.50	21.00	21.00
16x22	14.75	6.70	6.70	28x32	53.00	24.50	24.50
16x24	15.00	7.00	7.00	28x36	64.00	27.00	27.00
16x28	24.60	10.00	10.00	30x30	49.00	21.50	21.50
16x30	27.90	11.00	11.00	30x36	67.50	28.50	28.50

Ventilators for Cords—50 cents list extra on sizes up to 14 x 14, and \$1.00 list extra on sizes above.



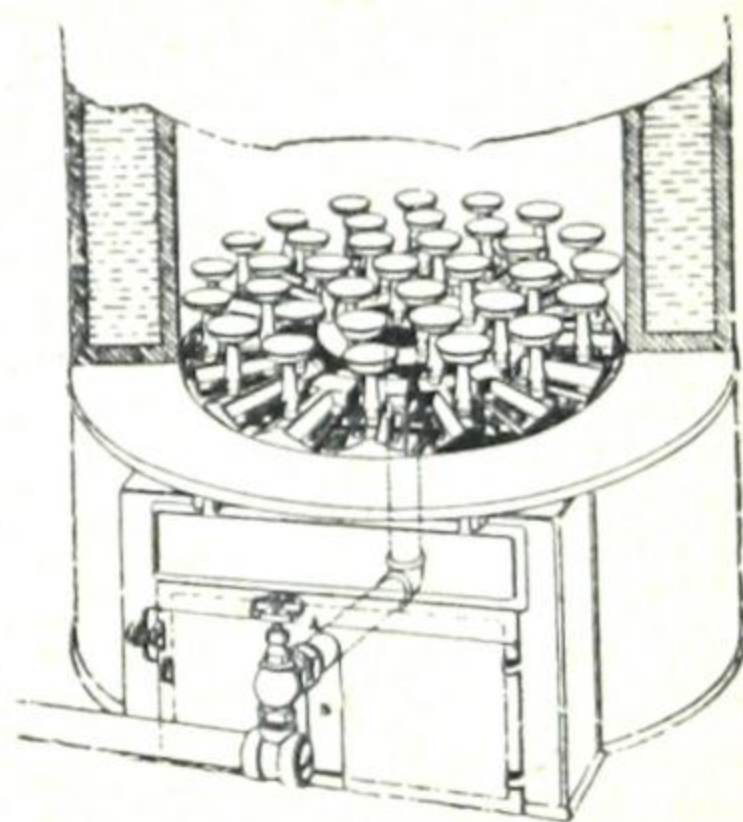
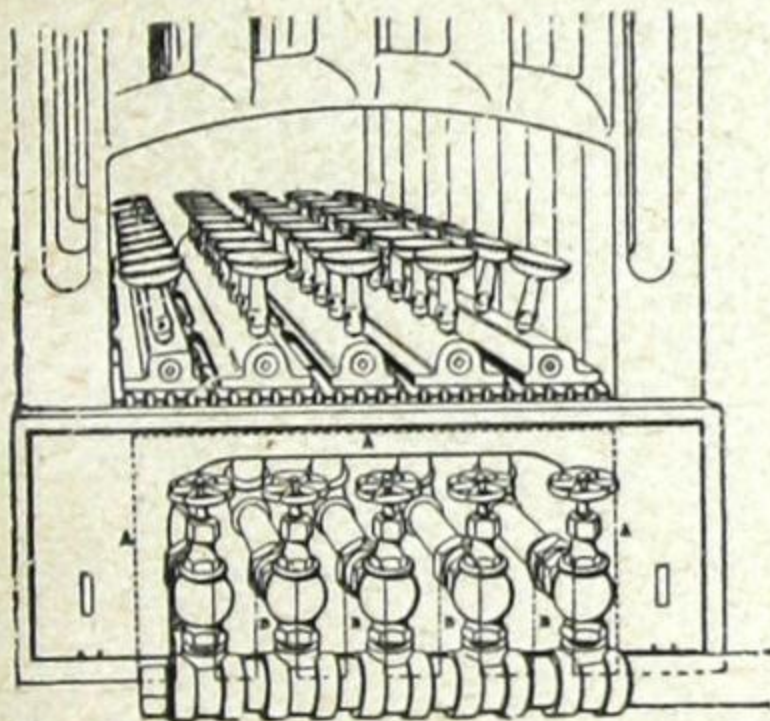
STEAM FITTERS' SUPPLIES

"STANDARD" GAS SAVING BURNERS

Most Economical—Most Efficient

"Standard" Gas Saving Burners applied to Steam Heating Boilers, Hot Water Heating Boilers and Hot Air Furnaces heat quickly.

Prices of Square, Rectangular and Round "STANDARD" Burners quoted upon receipt of request and size of fire box, inside measurements, name, make and serial number of Boiler, length and breadth of ash pit door opening.



STEAM FITTERS' SUPPLIES**BRONZE AND BRONZING LIQUID**

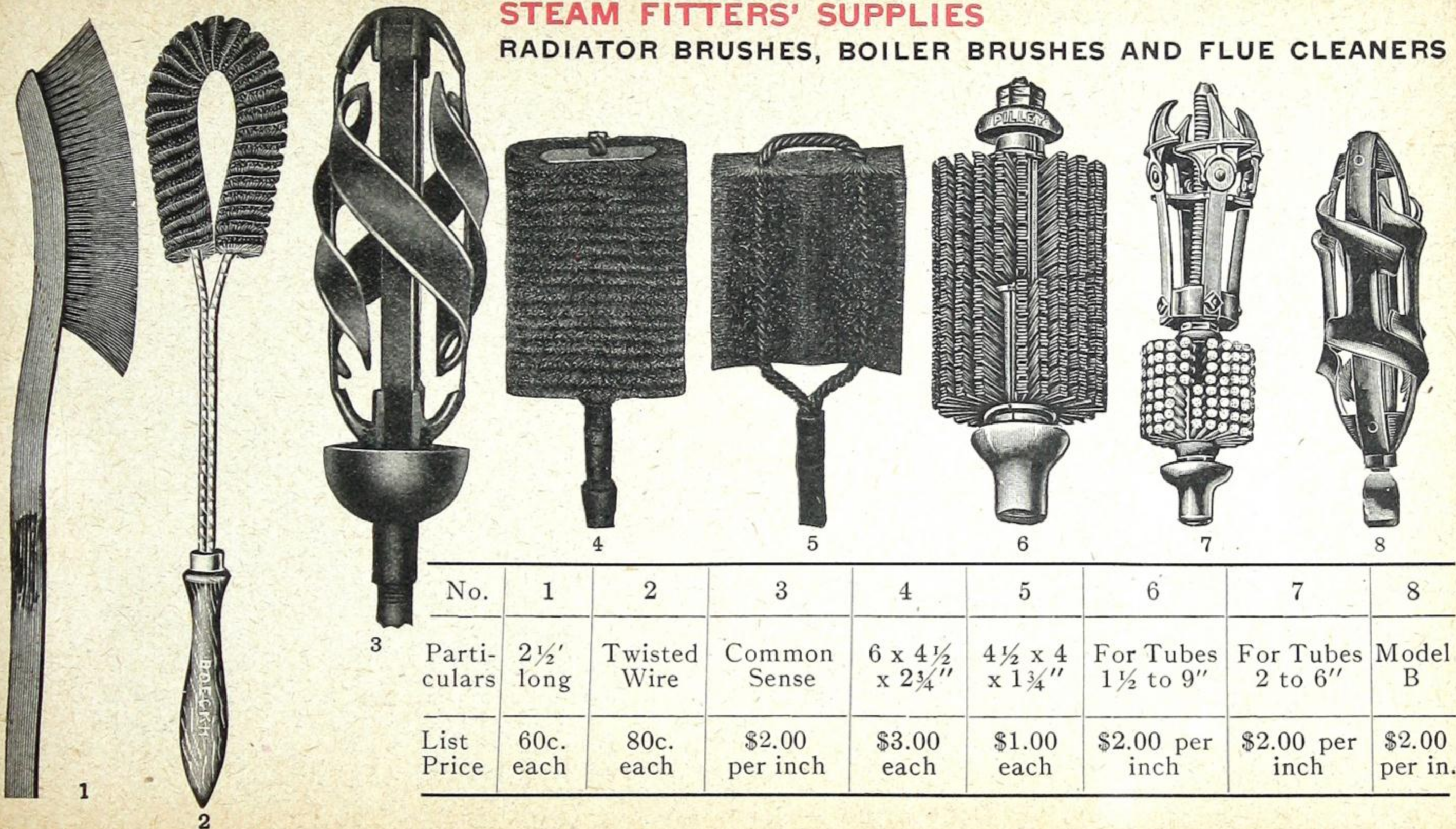
Brilliant Aluminum... per lb. \$2.00	Brilliant Crimson.... per lb. \$1.50	Patent Light Blue... per lb. \$2.00
" Pale Gold... " 1.25	Superior Pale Gold... " 1.75	" Dark Blue... " 2.00
" Copper..... " 1.50	Enamel Aluminum... " 2.50	" Blue Violet... " 2.00
" Lemon..... " 1.50	Patent Olive Green.. " 1.75	" Dark Green.. " 1.75
" Orange..... " 1.50	" New Green... " 1.75	Bronzing Liquid.... per gal. 2.50
" Fire..... " 1.50		

How to Apply Bronze Successfully to a Radiator

Following are rules laid down by one competent to instruct, regarding the method of applying bronze to steam or water radiators: it is advisable first to give the radiator a coat of primer. The majority of steam fitters, as a rule, use a yellow ochre. While this serves the purpose, at the same time it occupies considerable time in applying the same, and still more time is taken by the operator in waiting for this to dry. It is therefore recommended to use instead of ochre for this first coat, regular bronzing liquid, without the addition of any bronze powder. This will cover well the radiator, especially where there is dust or rusted parts. It will dry quickly and with a hard and glossy finish, and ordinarily, the steam fitter will find it much more convenient to use the liquid referred to.

When the liquid has become thoroughly dry, it will take but a few moments to mix the bronze powder with the bronzing liquid, in the proportion of $3\frac{1}{2}$ pounds bronze to 1 gallon liquid—that is in case of gold. Then apply in one direction only, with a soft brush—this is most important. Too often steam fitters use a stiff brush, overlooking the fact that bronze is nothing else but a very fine ground metal. A stiff brush scratches and ruins polish of bronze.

It is safe to follow the same method in the case of aluminum bronze, except that $1\frac{1}{4}$ pounds is sufficient to 1 gallon liquid, and one pound of aluminum bronze, it is estimated, should cover about 600 sq. ft. or more radiation, while one pound of gold, about 300 sq. ft., always allowing that one-third of the radiator, in the back, is not finished—that is, not bronzed at all.

STEAM FITTERS' SUPPLIES**RADIATOR BRUSHES, BOILER BRUSHES AND FLUE CLEANERS**

No.	1	2	3	4	5	6	7	8
Parti- culars	2½' long	Twisted Wire	Common Sense	6 x 4½ x 2¾"	4½ x 4 x 1¾"	For Tubes 1½ to 9"	For Tubes 2 to 6"	Model B
List Price	60c. each	80c. each	\$2.00 per inch	\$3.00 each	\$1.00 each	\$2.00 per inch	\$2.00 per inch	\$2.00 per in.

STEAM FITTERS' SUPPLIES

"IRON" BOILER CEMENT

For mounting Hot Water and Steam Heaters and Stoves, or for Iron Joints exposed to temperature of 400° or under.

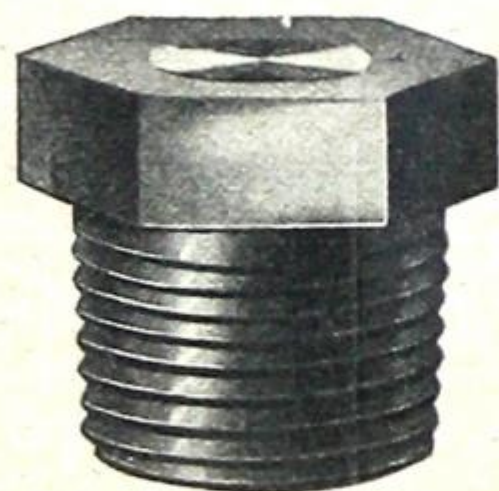
The finest article in the market. It is easily worked, will not drop out of joints while being mounted. Dries hard in the joints, yet keeps well in stock in cans or barrel.

Bakes hard under heat, and finally does not honeycomb or crumble in the joints.

5 and 10 lb. cans.....20c. per lb.

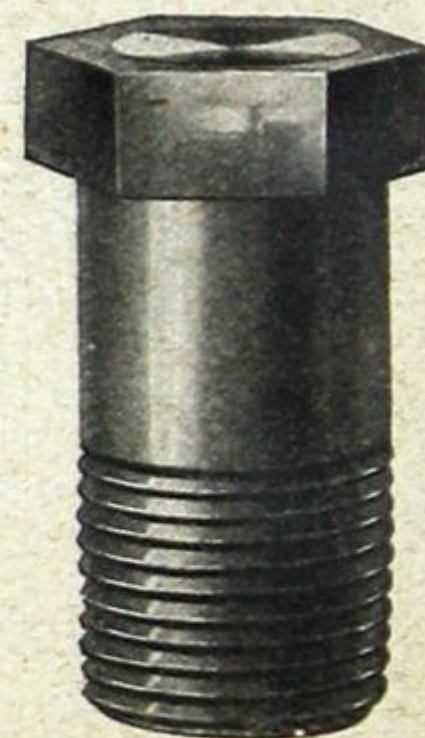
FUSIBLE PLUGS

Fusible Plugs are made of steam metal filled with pure Banca tin and stamped to conform to the most rigid inspection.

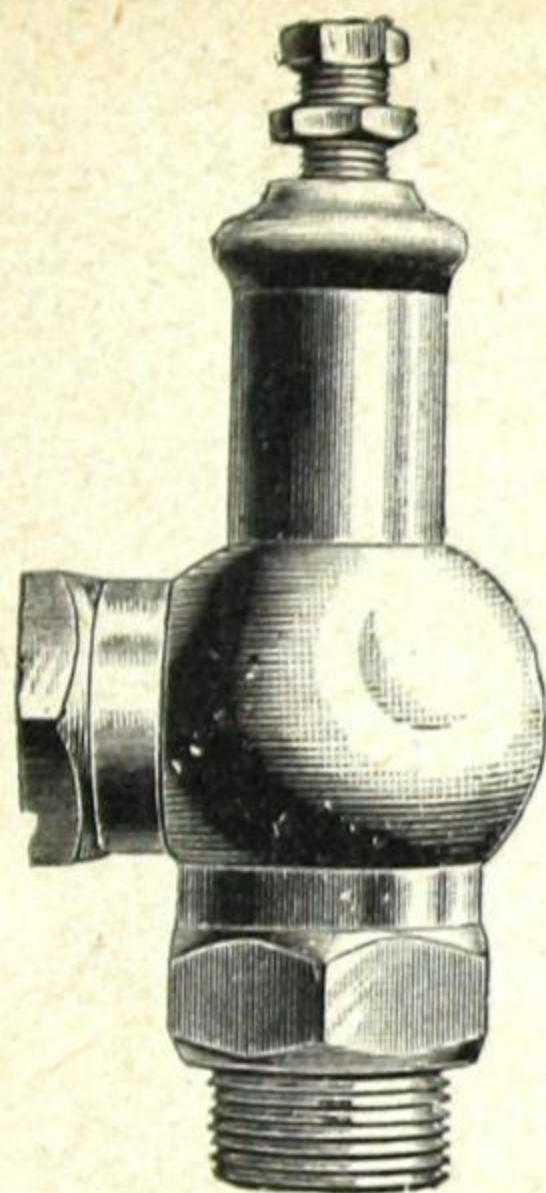


Short
One-Half Full Size

Size, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	1
Price Short	\$0.60	\$0.75	\$1.00
" Long.....	1.20	1.50	2.00



Long
One-Half Full Size

**RELIEF VALVE**

Size, inches	1/2	3/4	1	1 1/4	1 1/2	2
List Price	\$3.75	\$5.63	\$7.50	\$9.38	\$11.25	\$15.00

Screwed inlet to 100 lbs.

STEAM FITTERS' SUPPLIES**STANDARD BRASS POP
SAFETY VALVES**

Our low pressure pop safety valve is well proportioned and its construction includes all the features necessary to make it reliable and efficient. Regularly set at ten pounds.

Size, inches.....	3/4	1	1 1/4	1 1/2
Finished body...	\$ 8.00	\$10.00	\$12.00	\$15.00
Size, inches.....	2	2 1/2	.....	.....
Finished body...	.....	\$23.00	\$38.00	.....

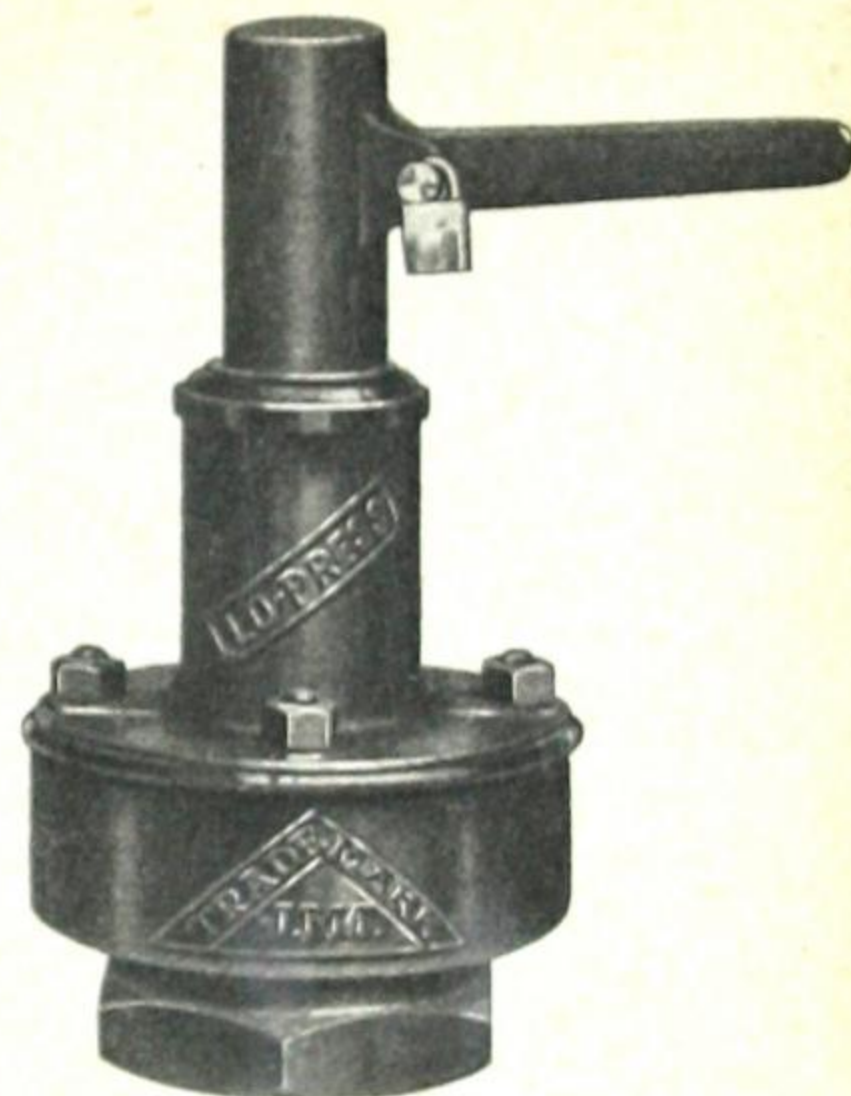
IMPROVED SAFETY VALVES**Iron Body****Brass Mounted**

Size, inches.....	2	2 1/2	3
List, screwed or flanged	\$35.00	\$55.00	\$75.00

Pressure, 15 to 200 lbs.

Register Numbers:—Ont., 738; Alta., 975; Sask., 2314.

Valves over 2" diam. have flanged inlet connections.

**LO-PRESS SAFETY VALVES****Iron Body****Brass Mounted**

Size, inches...	2	2 1/2	3	3 1/2	4
List, screwed or flanged.....	\$ 35.00	\$ 55.00	\$ 75.00	\$ 90.00	\$ 110.00
Ont. Reg. No.	537	537	537	537	537
Pressure, lbs...	15	15	15	15	15

STEAM FITTERS' SUPPLIES**EXHAUST PIPE HEADS**

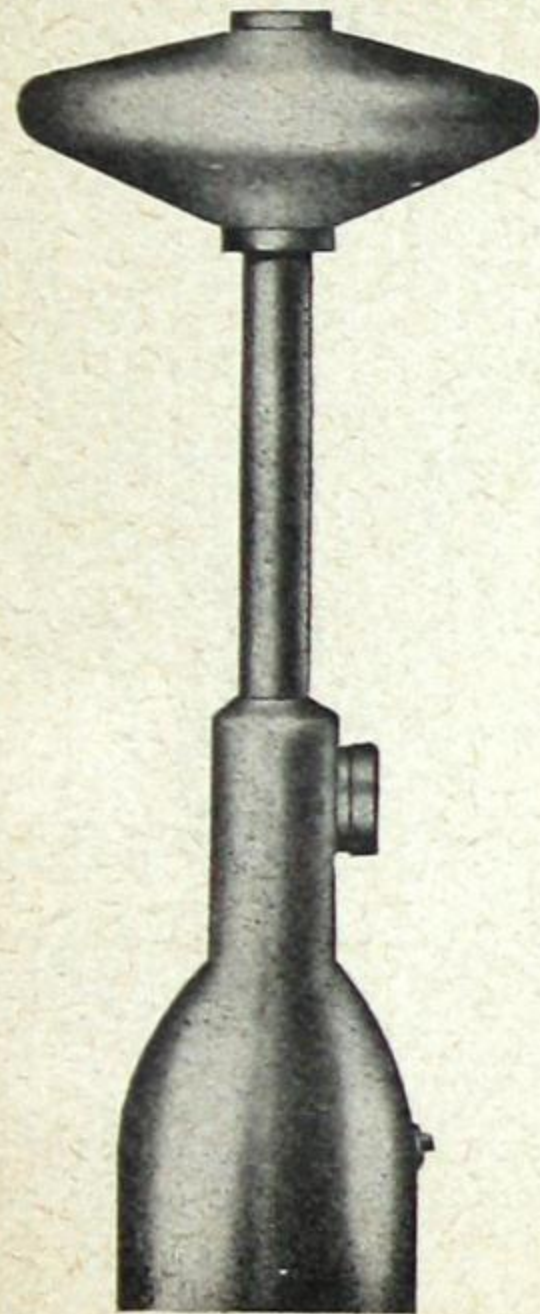
Exhaust Pipe.....Inches	1 and 1½	2 and 2½	3	3½	4	4½
Price.....each	\$20.00	\$25.00	\$30.00	\$30.00	\$40.00	\$40.00
Exhaust Pipe.....Inches	5	6	7	8	10	12
Price.....each	50.00	60.00	75.00	90.00	125.00	150.00

VERTICAL AND HORIZONTAL OIL SEPARATORS

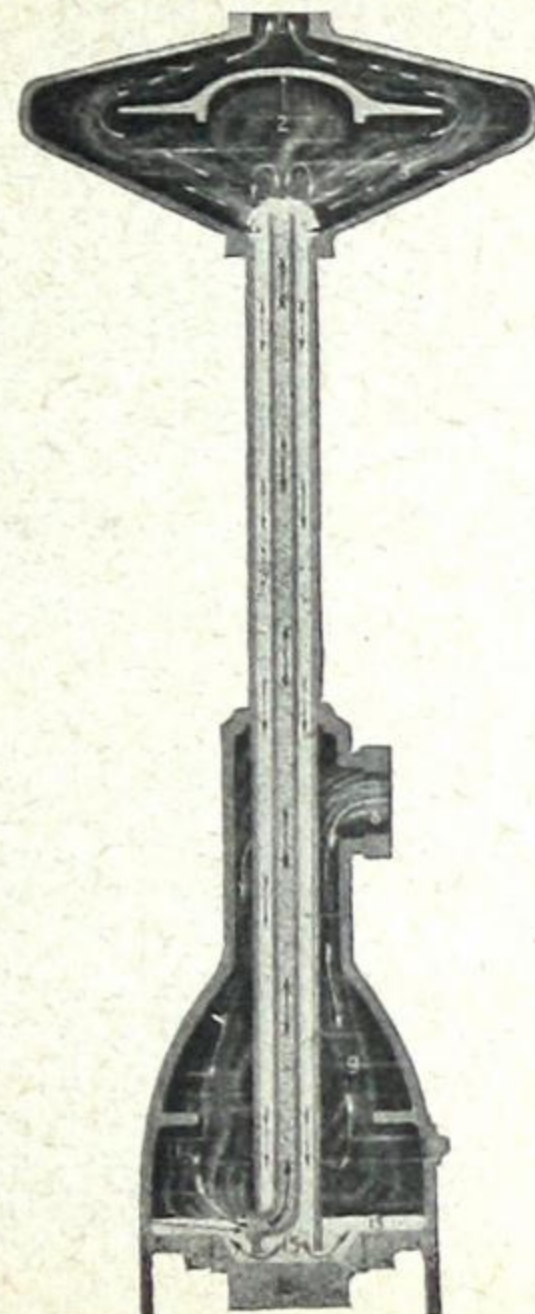
Size.....Inches	1½	2	2½	3	3½	4	4½
Price.....Each	\$24.00	\$28.00	\$34.00	\$42.00	\$50.00	\$58.00	\$68.00
Size.....Inches	5	6	7	8	9	10	
Price.....Each	76.00	98.00	116.00	134.00	152.00	170.00	

MORRISON LOW PRESSURE WATER FEEDER

Price \$25.00

STEAM FITTERS' SUPPLIES**HONEYWELL HEAT GENERATORS**

General view.



Sectional view, showing mercury seal

For Hot-Water Heating Outfits

When a Honeywell Heat Generator is properly connected up to a hot-water heating system, it seals it and permits the generation of a pressure varying from 0 lb. to 10 lbs. When a pressure of 10 lbs. is raised, the mercury seal within it is opened and the pressure automatically released.

The Honeywell Heat Generator thus insures a higher temperature and a consequent quickened circulation, permits the use of smaller pipes and about 10% less radiation. The principal results obtained by its use are:—

First—Lower first cost.

Second—Wider range of temperatures.

Third—Economy in fuel.

Fourth—An improvement in an otherwise sluggish circulation.

Fifth—Increasing the efficiency of jobs already installed.

DATA AND LIST PRICES

No.	No. sq. ft. taken care of	Nom. Weight Mercury lbs.	Approx. weight crated	Total weight inches	Height bottom to centre of pipe opening	Extreme width	List price
1	1,200	3	42	28½	12½	8½	\$25.00
2	2,500	6½	52	29¼	12½	9	35.00
3	4,500	11	62	30½	12	12½	50.00
4	10,000	15	72	30½	12	12½	65.00

STEAM FITTERS' SUPPLIES

THE CLARK TEMPERATURE BOOSTER

The CLARK TEMPERATURE BOOSTER is a device which increases the circulation of the water, in hot water heating systems, by putting a pressure on the system, thereby causing the water to travel more rapidly to and from the boiler to the radiators, thus causing the water to be more hot and to maintain that constant heat.

The **Clark Temperature Booster** is a brass cylindrical case, tapped for one inch pipe connections and larger and reinforced at the tappings for additional strength. It is connected by this means to the expansion tank and to the system. Within this case is a valve which is weighted sufficiently for the amount of radiation it is designed to carry. The weighted valve has a brass seat as well as a brass bearing, being placed in the opening at the bottom of the case.

The brass by-pass cage is removable by simply taking out the threaded plug at the bottom of the by-pass. This provides an effective method of freeing the valve of sediment or dirt at any time.

The top shaped check valve and its seat are removable from the brass by-pass and its cage.

The top shaped check valve has a slotted head for the purpose of re-grinding the seat of this valve if it is found necessary to do so.

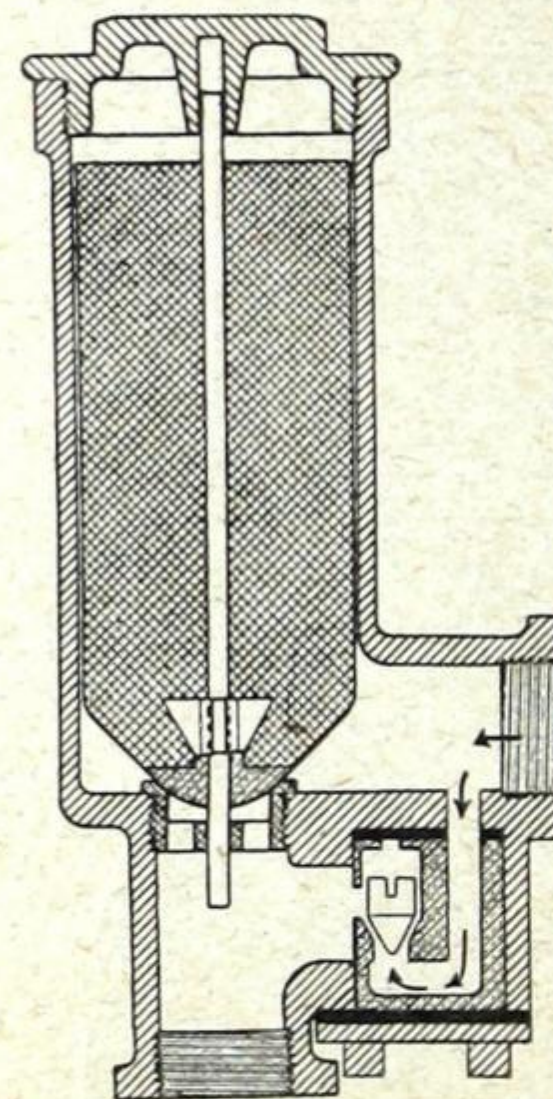
It has the most simple mechanism of any valve on the market, all the parts being instantly accessible.

In designing a new system to operate under the **Clark Temperature Booster**, figure the radiation the same as for gravity jobs or open tank systems, then deduct ten per cent. from the radiation, and use the pipe one size smaller throughout, leaving the boiler capacity the same as for a gravity system.

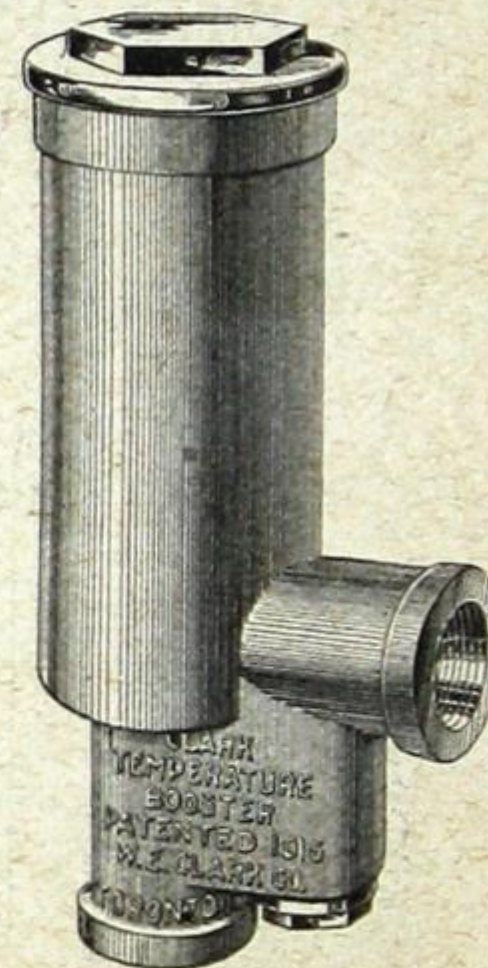
Dimensions and Prices

No.	A1	B1
Diameter, over all.....	4½"	5½"
Height	10"	12"
Inlet and Outlets.....	1"	1½"
Price.....	\$20.00	\$25.00

A1 to be installed near expansion tank, B1 in basement.



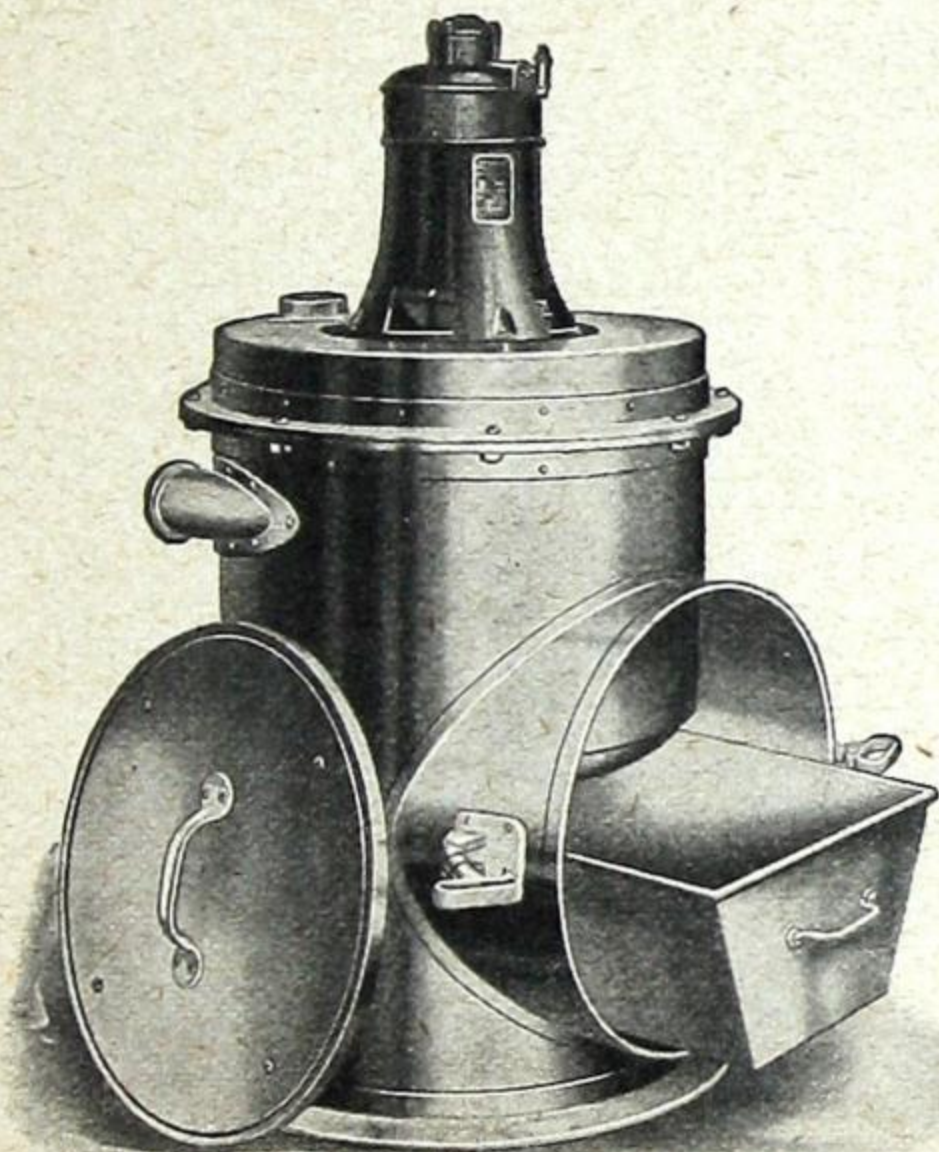
Sectional View



Outside View

STEAM FITTERS' SUPPLIES

SPENCER TURBINE CLEANERS



To insure healthy surroundings, dust and dirt must be removed without spreading any part of it.

Where the Spencer Home Cleaner is installed all the dirt is sucked out through a tube and no foul exhaust air or any part of the dust is discharged back into the rooms.

There is nothing to handle in your rooms but the hose and cleaning tool.

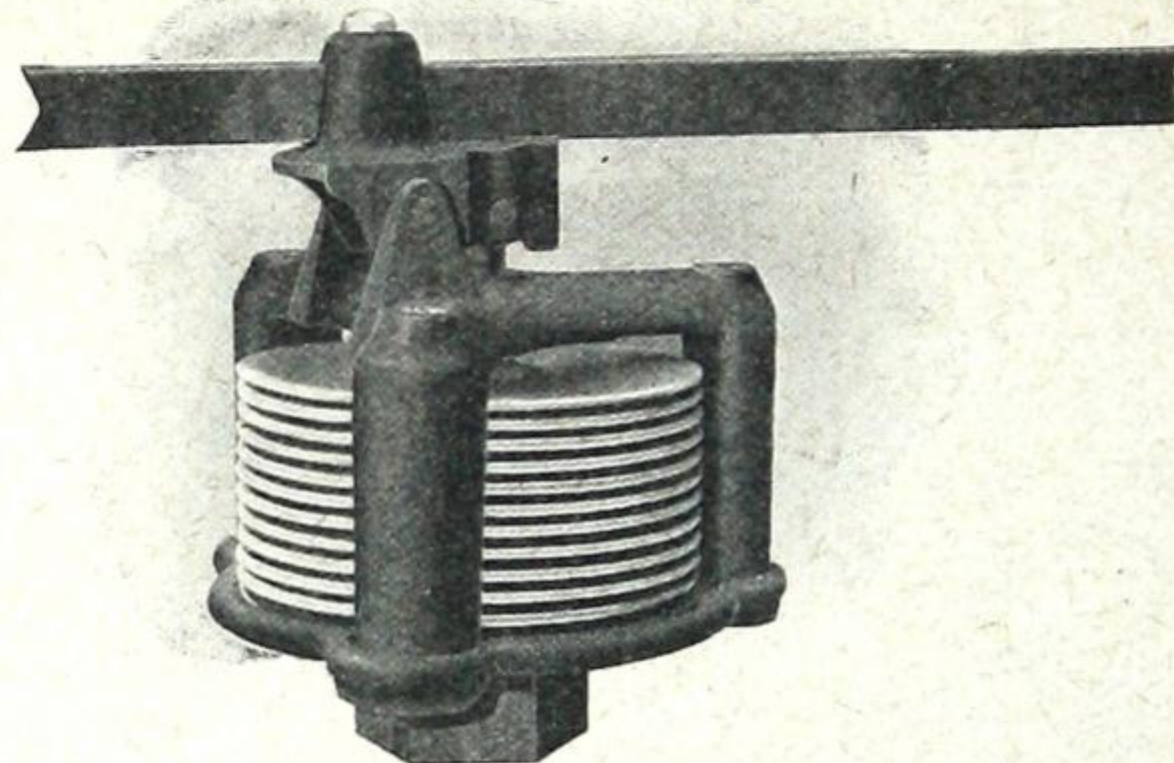
All the machinery is in the basement where it is moved or handled, and is, therefore, not skimmed in size, weight or efficiency; hence supplies a strong, even vacuum so well controlled as to avoid all possibility of injury to rugs or fabric and removes all dust and grit from cracks or pores of bare floors.

The cut represents the Spencer Home Cleaner which has met with such universal favor and commendation. This machine exemplifies the same high grade construction, exclusive features, and correct principles which have characterized the larger Spencer machines, and sells at a price which places it within the reach of the average home.

The Spencer machine, in larger sizes, meets every requirement for all classes of buildings and is found in many of the finest buildings throughout the United States and Canada.

Complete illustrated catalogue furnished on request.

STEAM FITTERS' SUPPLIES
SYLPHON DAMPER REGULATOR No. 22
For Steam Boilers



(Protected by American and Foreign Patents. U. S. Patents June 2, 1903; June 16, 1903; May 24, 1904, and other applications pending).

It is composed entirely of metal, is frictionless; is sensitive to the last degree; is positive and invariable in its action, and will not deteriorate with age. The simplicity of its construction will be seen in the engraving.

No. 22—List price.....each \$20.00

HEAT REGULATORS

Minneapolis and Jewel

Complete, with Clock Attachment.....\$35.00

Complete, without Clock Attachment..... 30.00

STEAM FITTERS' SUPPLIES**ASBESTOS CEMENT REQUIRED TO COVER THE FOLLOWING BOILERS****To the Thickness of $1\frac{1}{4}$ inch****MOGUL ROUND HOT-WATER BOILERS**

No.....	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	9
Amount in pounds.....	125	150	150	175	175	200	200	225	250	275	300	325	350	375	400	450

SAFFORD ROUND STEAM BOILERS

No.....	4-19-S	5-19-S	6-19-S	4-22-S	5-22-S	6-22-S	4-25-S	5-25-S	6-25-S	4-28-S	5-28-S	6-28-S	4-31-S	5-31-S	6-31-S	4-34-S	5-34-S	6-34-S
Amount in pounds.....	125	150	175	150	175	200	200	225	250	250	275	300	325	350	375	400	450	500

SAFFORD TRIUMPH MOGUL WATER HEATERS

No.....	T-00	T-0	T-101	T-10	T-12	T-20	T-22	T-30	T-32
Amount in pounds.....	25	40	50	50	75	100	125	150	175

See directions for applying Boiler Covering, page 268.

STEAM FITTERS' SUPPLIES**SAFFORD SQUARE POT HOT-WATER AND STEAM BOILERS**

No.....	370-3	371-3	370-4	371-4	370-5	371-5	370-6	371-6	370-7	371-7	370-8	371-8
Amount in pounds.....	250	275	300	325	350	375	400	425	450	475	500	525
No.....	370-9	371-9	370-10	371-10	370-11	371-11	370-12	371-12	370-13	371-13	370-14	
Amount in pounds.....	550	575	600	625	650	675	700	725	750	775	800	

SAFFORD SECTIONAL HOT-WATER AND STEAM BOILERS

Diam. Grate..	15"			19"			22"			25"				28"				36"					48"				
No. Sections..	4	5	6	5	6	7	5	6	7	5	6	7	8	5	6	7	8	5	6	7	8	9	6	7	8	9	10
Amount in lbs.	100	125	150	240	280	320	275	325	375	350	400	450	500	500	575	650	725	575	650	725	800	875	850	950	1050	1150	1250

SAFFORD MAGAZINE SELF-FEED DOWN-DRAFT BOILERS

Diam. Grate.....	26"						31"								47"							
No. of Sections.....	4	5	6	7	8	9	4	5	6	7	8	9	10	11	5	6	7	8	9	10	11	12
Amount in pounds.....	200	225	250	275	300	325	400	440	480	520	560	600	640	680	650	700	750	800	850	900	950	1000

See directions for applying Boiler Covering, page 268.

STEAM FITTERS' SUPPLIES**COVERING****The Safford-Kewanee Portable Boilers****PORTABLE FIREBOX**

No. . . .	0000	000	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
Cost of Material	20.00	22.00	26.00	28.00	30.00	32.00	36.00	42.00	46.00	52.00	60.00	62.00	70.00	74.00	76.00	88.00	100.00	112.00	116.00	124.00	126.00	138.00

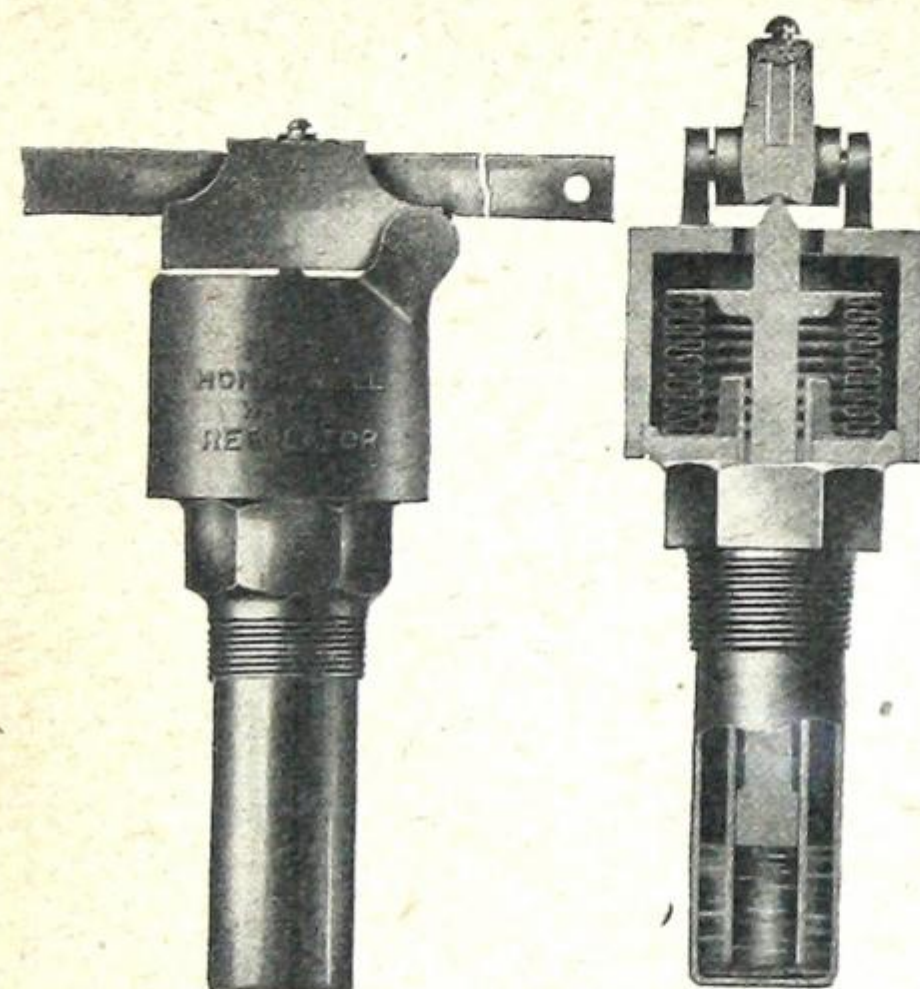
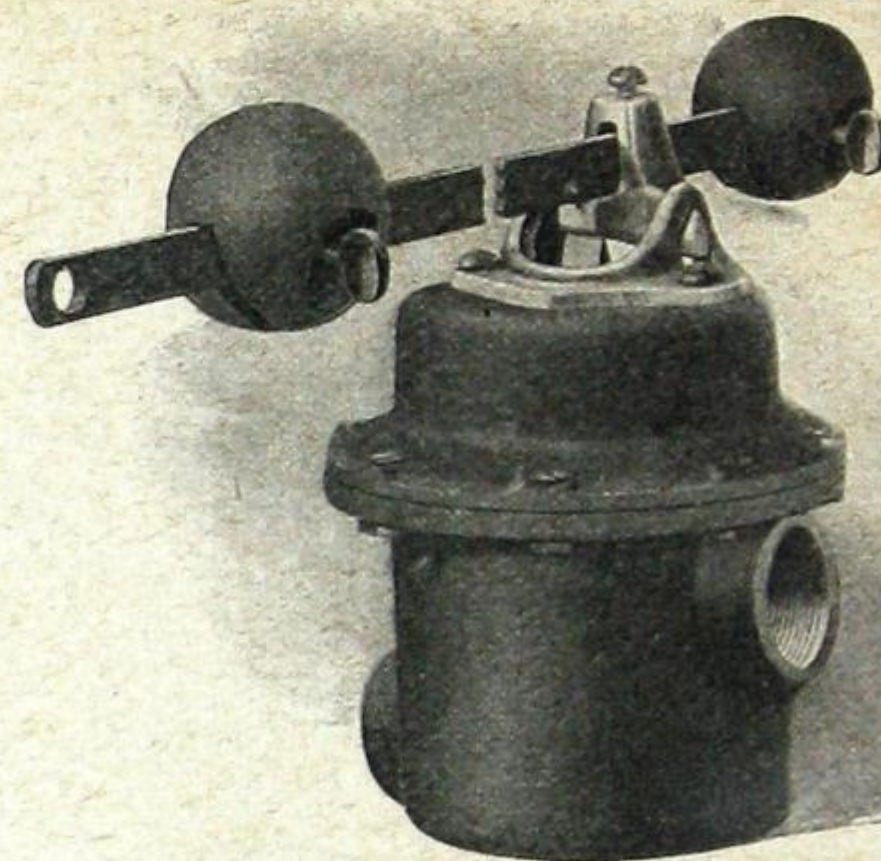
PORTABLE SMOKELESS

No. . . .	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322
Cost of Material	40.00	42.00	45.00	47.00	49.00	53.00	59.00	63.00	69.00	74.00	85.00	88.00	102.00	106.00	110.00	112.00	116.00	132.00	134.00	144.00	148.00	160.00

The above costs of material for covering Safford-Kewanee Portable Boilers are subject to discount.
See directions for applying Boiler Covering, page 268.

STEAM FITTERS' SUPPLIES**WATER REGULATORS****For Hot-Water Boilers or Tank Heaters**

Until this device was brought out, there was practically nothing made that could be recommended for regulating the draft and check dampers of a water boiler. There was no device to keep the fire burning evenly and thus maintain the desired temperature in the water. A regulator was needed which would prevent the water from boiling over and prevent overheating and fuel waste.

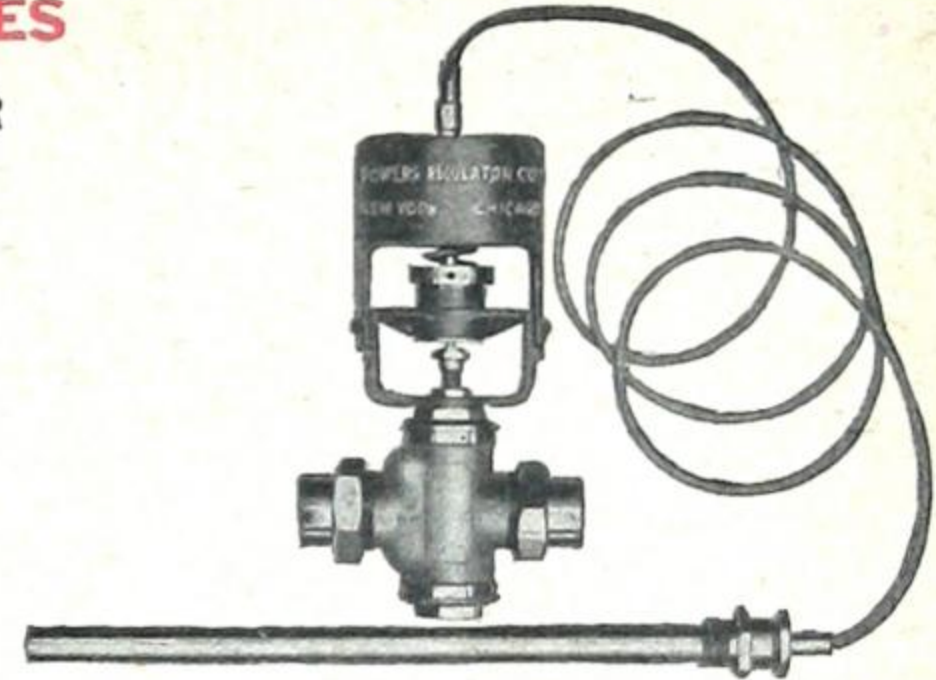
**No. 3 Honeywell Water Regulator****Sylphon Water Regulators****List Prices and Data**

Name	No.	Height Inches	Width Inches	Size Thread Inches	Weight Lbs.	Water Temperatures	List Price
Honeywell.....	3	10	..	1½	..	.....	\$20.00
Sylphon.....	42	7	5	1½	35	120 to 180	25.00
".....	43	7	5	1½	35	160 to 220	25.00
".....	44	7	5	1½	35	190 to 240	25.00

STEAM FITTERS' SUPPLIES**POWERS TANK REGULATOR**

While especially designed for steam heated hot water service tanks, its extreme sensitiveness and accuracy make it applicable to all places where even temperatures are essential, such as pasteurizers, cooking apparatus, processing vats, dry kilns, vulcanizing machines, canning factories, sugar refineries, etc., etc.

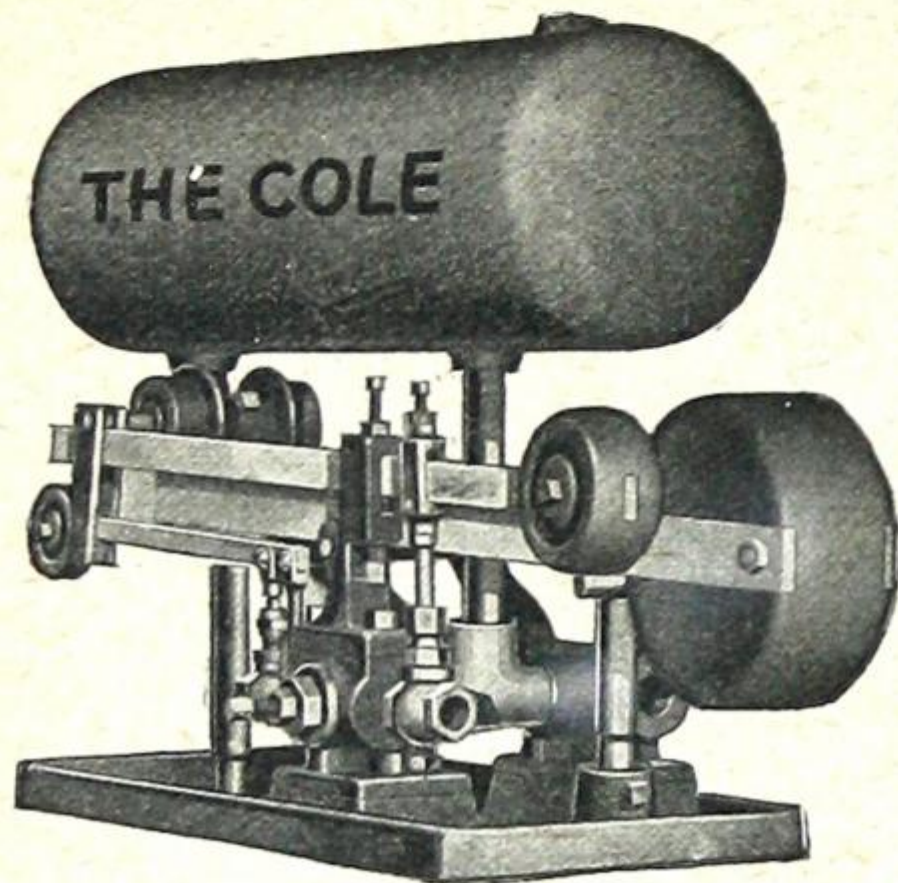
Regulator will be set at 160 degrees with adjustability 20 degrees above and below, unless otherwise ordered. Other operating temperatures, if desired. Always give valve size when ordering.



Valves $\frac{1}{2}$ " to $1\frac{1}{2}$ ", Brass. Over $1\frac{1}{2}$ ", Iron

List Prices and Data

Steam Valve Size Inches	Length of Stem Inches	Sizes of Tapping Required, Ins	Shipping Weight Lbs.	List Price	Steam Valve Size Inches	Length of Stem Inches	Sizes of Tapping Required, Ins	Shipping Weight Lbs.	List Price
$\frac{1}{2}$	20	1	36	\$60.00	3	20	$1\frac{1}{4}$	108	\$100.00
$\frac{3}{4}$	20	1	38	65.00	$3\frac{1}{2}$	20	$1\frac{1}{4}$	125	110.00
1	20	1	40	70.00	4	20	$1\frac{1}{4}$	140	120.00
$1\frac{1}{4}$	20	1	41	75.00	5	24	$1\frac{1}{4}$	160	260.00
$1\frac{1}{2}$	20	1	42	80.00	6	24	$1\frac{1}{4}$	190	350.00
2	20	1	55	90.00	8	24	$1\frac{1}{4}$	330	480.00
$2\frac{1}{2}$	20	$1\frac{1}{4}$	72	95.00					

STEAM FITTERS' SUPPLIES**DIRECT RETURN STEAM TRAP****Instructions for the Connecting Up of Single Trap Installation**

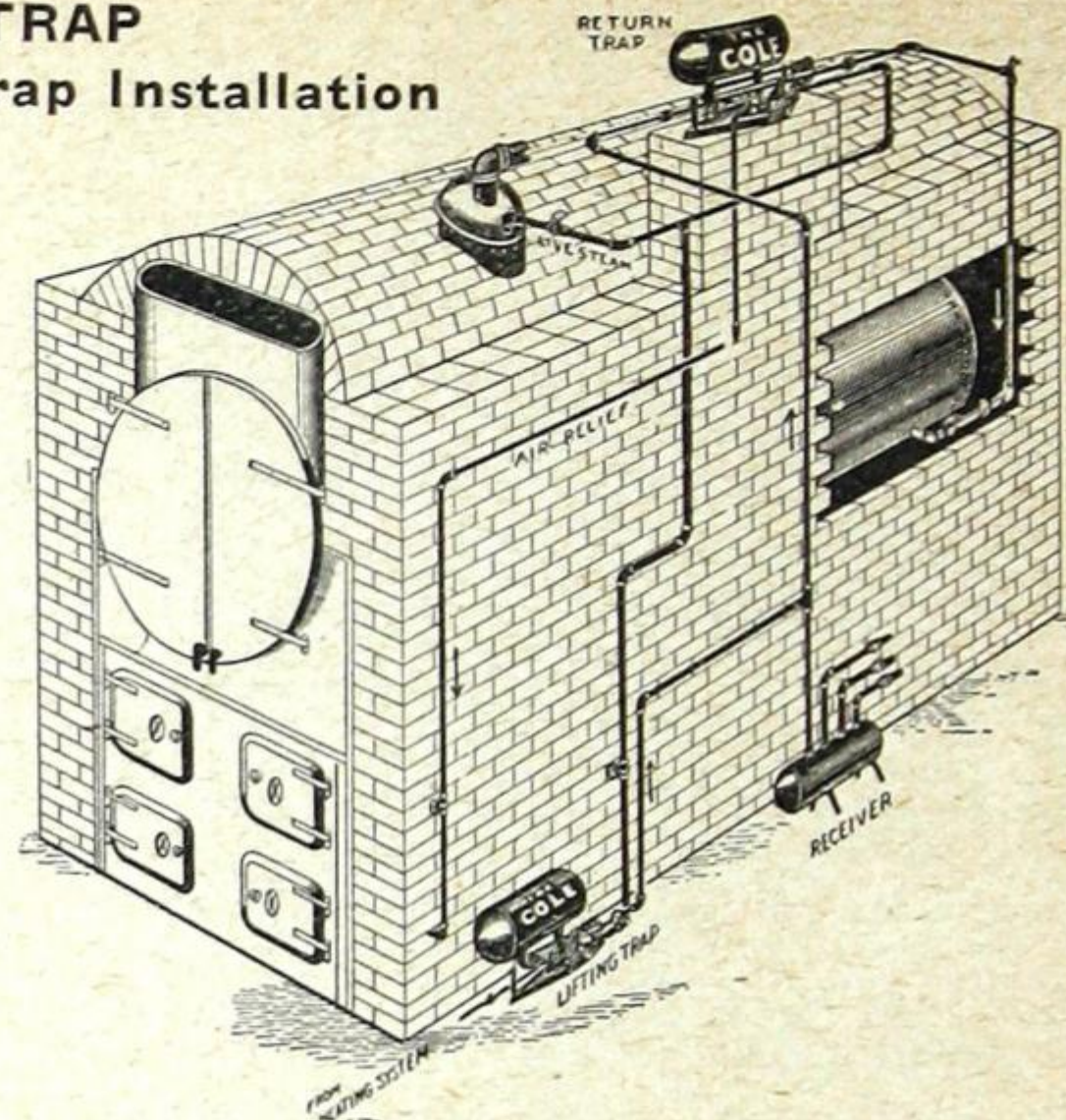
The Steam Trap with Self-Adjusting packing glands, (Packed on the Outside) Operating on Roller Bearings on a fixed Fulcrum which permits of full discharge at each operation.

Place Trap as near and 3 ft. to 4 ft. above water line of Boiler, and as few turns between Trap and Boiler, have good swing check valves, before entering Trap, also Boiler.

A separate opening should be provided in Boiler for the steam connection, water can enter boiler through top or blow-off.

Connect air-relief to ash pit with a globe valve to control to suit conditions.

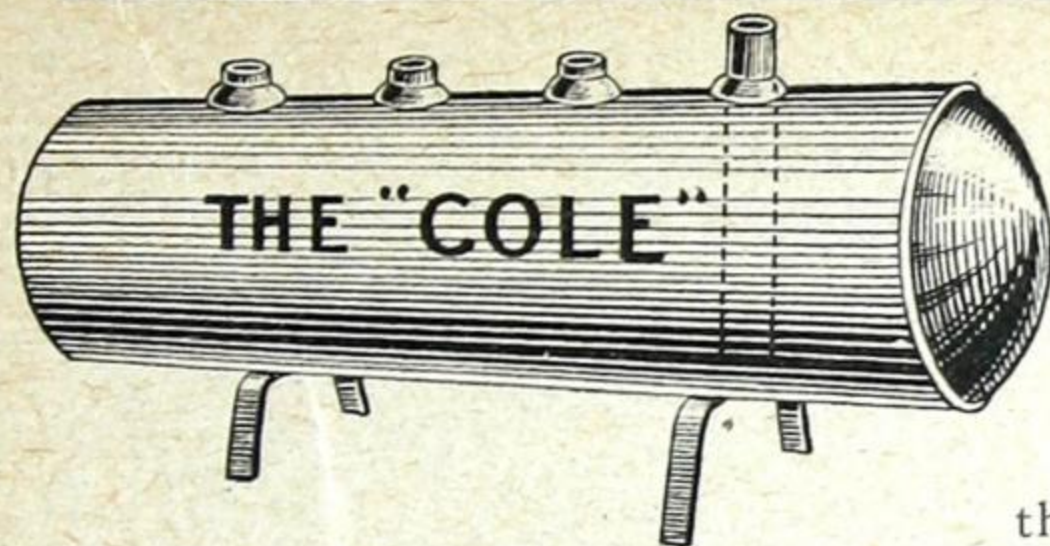
When used for high pressure work where many machines, dryers or cooking kettles, a receiver should be used, a swing check valve must be placed on each pipe entering Receiver.

**Price List of Boiler Feeders, Lifting Return, Vacuum and Condenser Steam Traps**

Number	Size of Pipes		Water per hour in lbs.	Direct Radiation in Sq. Ft.	Lineal Foot 1 inch Pipe	Boiler H. P.	List Price
	Steam	Water					
1	$\frac{3}{8}$	$\frac{1}{2}$	720	2160	6480	24	\$ 50.00
2	$\frac{1}{2}$	$\frac{3}{4}$	1400	4320	13960	48	60.00
3	$\frac{3}{4}$	1	2400	7200	21600	80	75.00
4	1	$1\frac{1}{4}$	4320	12960	38880	144	120.00
5	$1\frac{1}{4}$	$1\frac{1}{2}$	6720	20160	60480	224	165.00
6	$1\frac{1}{2}$	2	10200	30600	91800	340	225.00
7	$1\frac{1}{2}$	$2\frac{1}{2}$	18000	54000	162000	600	300.00

NOTE—These capacities are based on sixty operations per hour with a pressure equal to ten pounds per square inch at inlet. Horse-power based on thirty pounds water per hour.

For Lumber Kilns, Greenhouses divide by two, for Laundries and Brick Dryers divide by three, for Blower and Fanstacks divide by five.



THE "COLE" RECEIVER

In most Return Trap installations it is necessary to place a Receiving Chamber below all Drip Pipes so that Returns can accumulate while Trap is discharging.

No. 1 Receiver has capacity for Traps Nos. 1 and 2.

No. 2 Receiver has capacity for Traps Nos. 3 and 4.

No. 3 Receiver has capacity for Traps Nos. 5, 6 and 7.

Price List of "COLE" Receivers

	Size	Price
No. 1	6"x22"	\$10.00
No. 2	10"x24"	15.00
No. 3	12"x36"	25.00

STEAM FITTERS' SUPPLIES

THE "COLE" OIL SEPARATOR

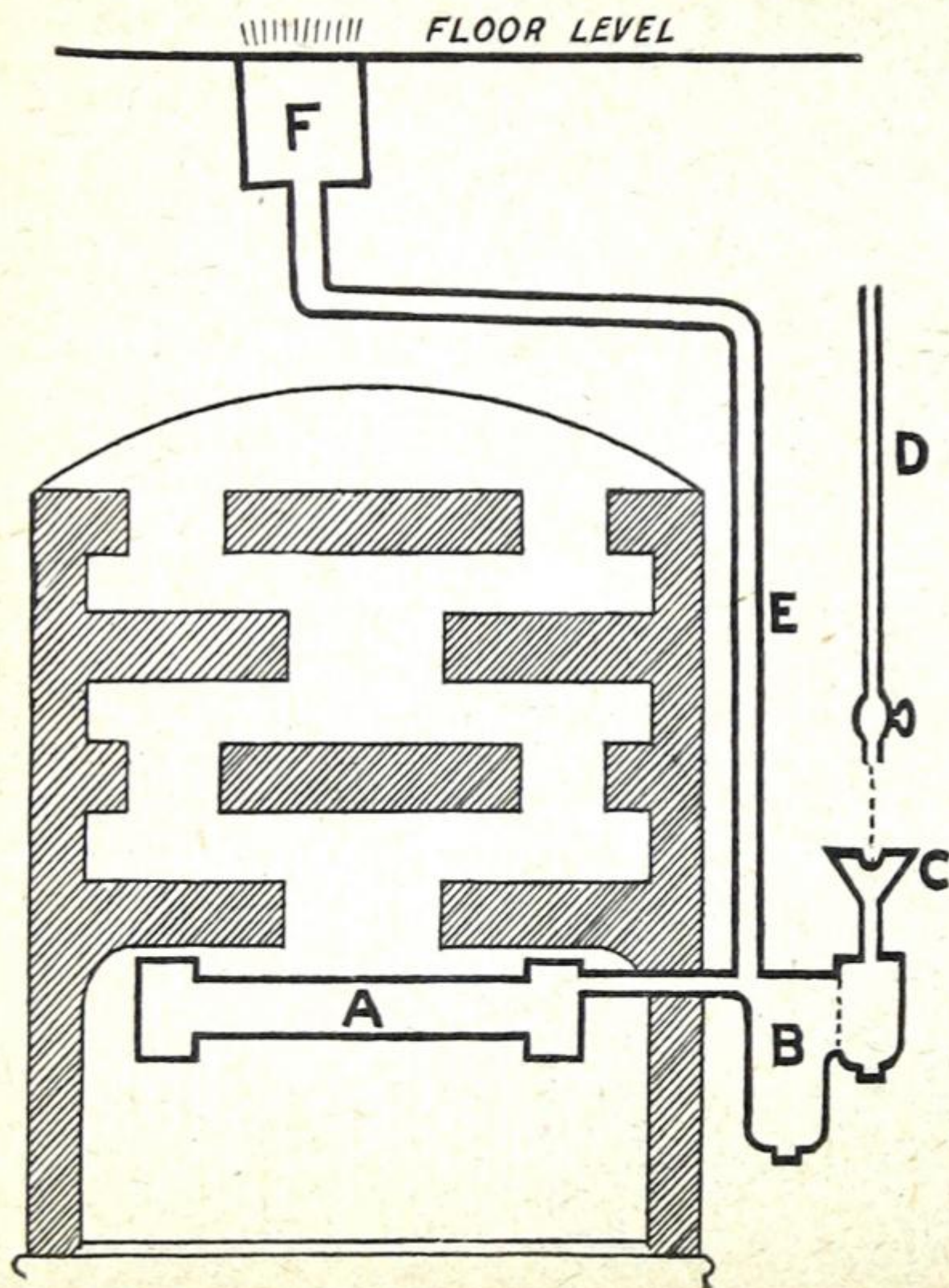
Separates the oil where others fail because it is built large enough. When the steam is allowed to expand, the oil will adhere to the water in the bottom. It cannot escape with the steam because it follows natural laws. Built to last and give the best satisfaction, as do our other products.

Size of Exhaust Pipe, ins.	Diameter inches	Height inches	Price
2	12	16	\$20.00
2½	14	18	25.00
3	16	20	30.00
3½	18	24	35.00
4	24	30	40.00
4½	28	30	45.00
5	30	36	50.00
6	36	36	60.00
7	36	40	75.00
8	40	48	90.00
10	48	48	125.00



STEAM FITTERS' SUPPLIES

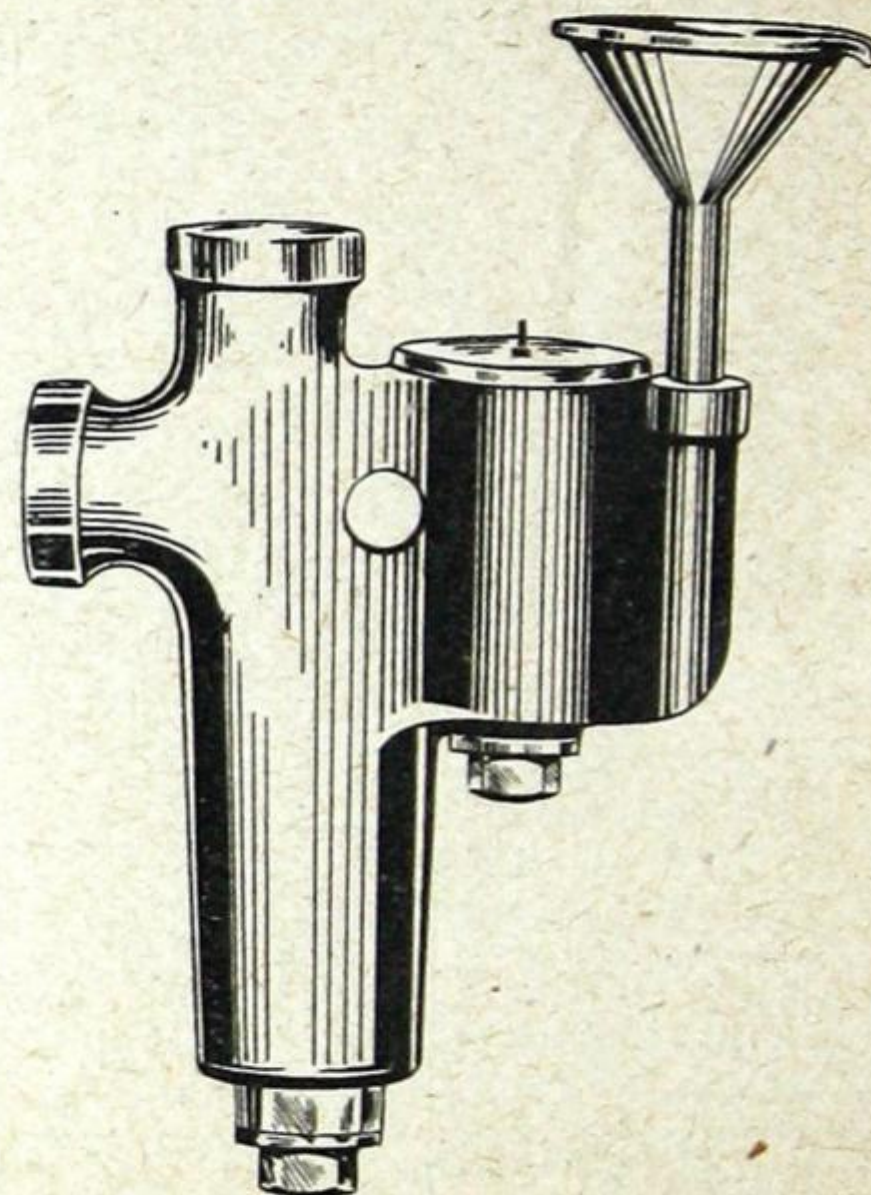
THE HYGGE-DONOR HUMIDIFYER



- A Retort in Furnace
- B The Vaporizing Chamber
- C Drip Funnel for Water Supply
- D Water Supply Pipe
- E Steam Pipe to Floor Grating
- F Floor Grating

The Hygge-Donor Humidifier. This apparatus, as shown in accompanying illustration, is attached directly to heating furnace (Hot Water, Hot Air or Steam Furnaces) having retort placed in firepot in such a position that it does not interfere in any way with the feeding of coal. Connected to retort on outside of furnace is the Humidifier. The water supply is fed into Humidifier at C, and passing into retort returns as vapor and flows through pipe E to floor grating F. This floor grating can be located anywhere on ground floor of house, but preferably in the hallway, thus enabling the moisture to circulate throughout whole building. Tests made in residences where **Hygge-Donor Humidifiers** have been installed show that the moisture will and does penetrate into every room from ground floor to attic.

List Price, \$40.00.



(Patented in the U.S. July 9th, 1907)
(Patented in Canada June 11th, 1907)

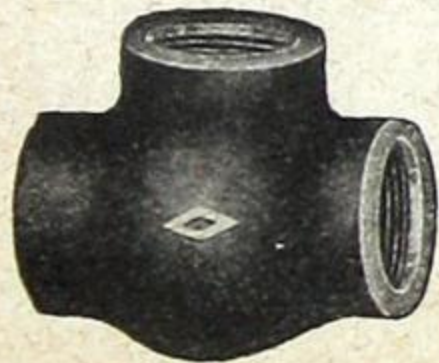
STEAM FITTERS' SUPPLIES **MALLEABLE IRON RAILING FITTINGS**



No. 1



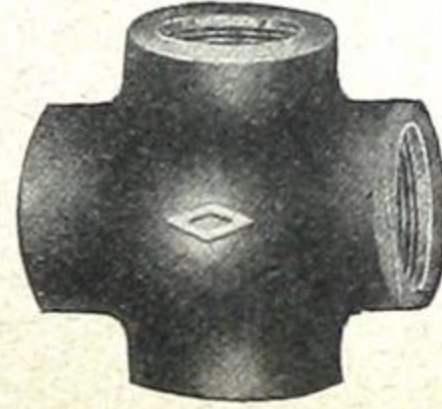
No. 2



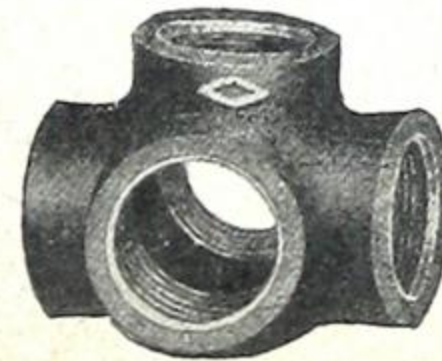
No. 3



No. 4



No. 5



No. 6



No. 7



No. 9



No. 8



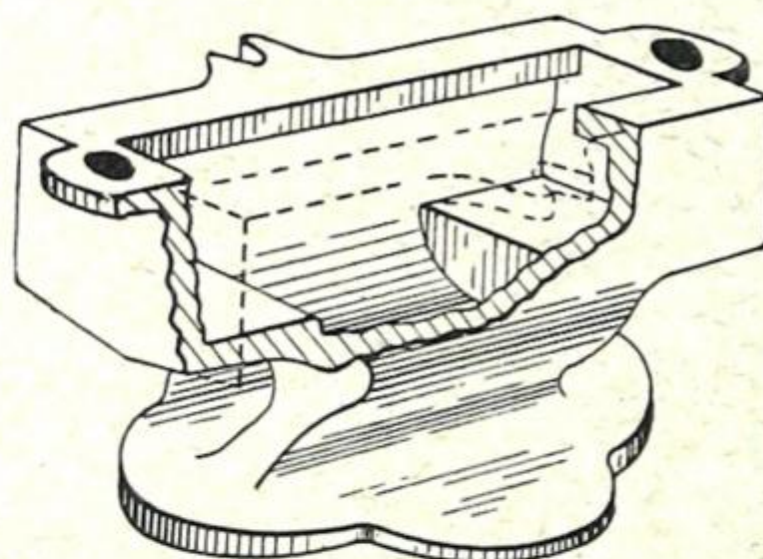
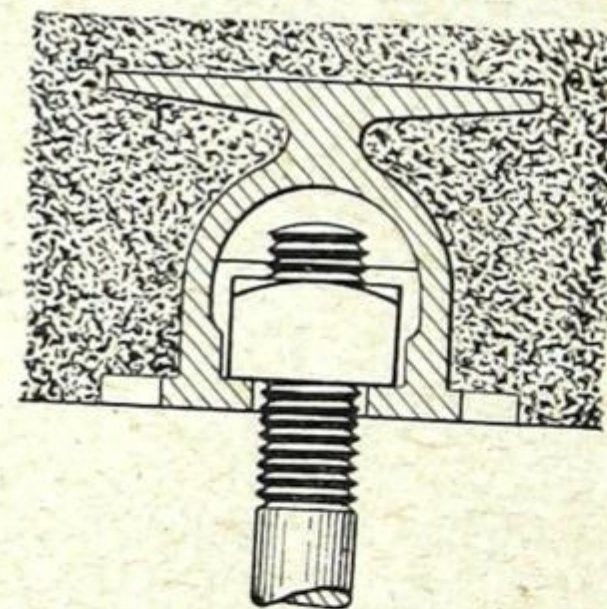
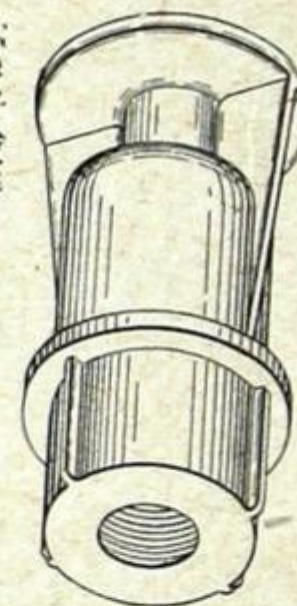
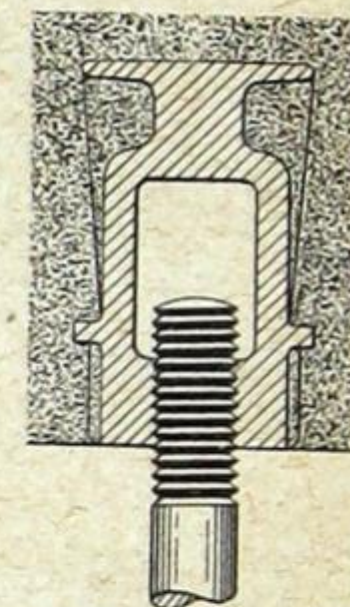
No. 10

Size.....	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
No. 1 Elbow.....	each	\$0.15	\$0.18	\$0.20	\$0.35	\$0.45	\$0.72
No. 2 Elbow side outlet.....	"	.20	.23	.25	.40	.50	.80
No. 3 Tee.....	"	.20	.23	.25	.40	.50	.75
No. 4 Tee side outlet.....	"	.30	.33	.35	.45	.55	.90
No. 5 Cross.....	"	.30	.33	.35	.45	.58	1.00
No. 6 Cross side outlet.....	"	.35	.38	.40	.50	.65	1.35
No. 7 Floor Flange.....	"	.14	.15	.15	.20	.28	.30
No. 8 Ball Ornament.....	"	.16	.18	.20	.25	.35	.90
No. 9 Globe pat'n floor flange.....	"	.16	.18	.20	.40	.50	.90
No. 10 Bushings.....	"	.....	.06	.07	.10	.12	.18

All Fittings are threaded right hand, unless otherwise ordered. Add 20 per cent. for Fittings threaded R. and L., or L. hand. Galvanized Fittings at double the above lists.

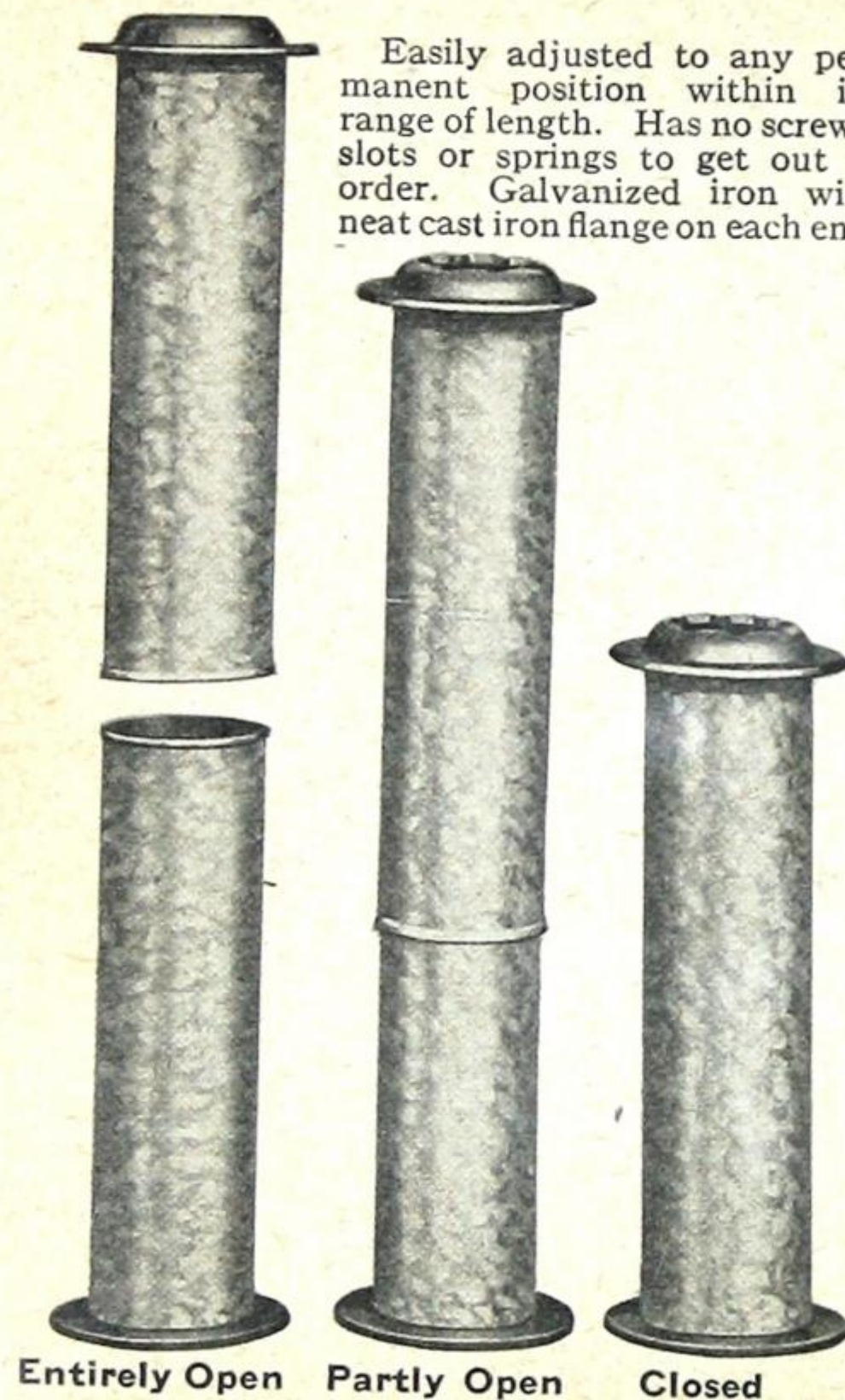
STEAM FITTERS' SUPPLIES**TELESCOPING FIRE-PROOF FLOOR SLEEVES****List Prices and Data**

Size of Pipe.....ins.	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	8
Minimum Length, ins.	14	14	14	14	14	14	14	14	14	14	14	14
Maximum Length, ins.	24	24	24	24	24	24	24	24	24	24	24	24
Price.....each	\$1.05	\$1.20	\$1.35	\$1.50	\$1.80	\$2.10	\$2.50	\$3.00	\$3.75	\$4.50	\$5.25	\$6.75

CONCRETE INSERTSNo. 1
Sectional ViewNo. 1
Installed ViewNo. 2
General ViewNo. 2
Sectional View**List Prices and Data of Concrete Inserts**

No. Size of Bolt:	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
No. 1.....	16	16	16	24	28	36	48
No. 2.....	16	16	16	24	28	36	48

Easily adjusted to any permanent position within its range of length. Has no screws, slots or springs to get out of order. Galvanized iron with neat cast iron flange on each end.



Entirely Open

Partly Open

Closed

HEATING DATA AND USEFUL INFORMATION

Copied from Standard Authorities, while we do not
guarantee it, we believe it to be reliable.

THE

DOMINION RADIATOR COMPANY
LIMITED

St. John Montreal Hamilton **TORONTO** Winnipeg Calgary Vancouver

HEATING DATA AND USEFUL INFORMATION

INSTRUCTIONS FOR APPLYING COVERING

On Safford-Kewanee Portable Boilers

Apply two thicknesses of 1" Mineral Wool Blocks, or one thickness of 1" Asbestos Sponge Felt, after which is to be applied a $\frac{1}{2}$ " coat of Asbestos, the whole covered with canvas casing.

An easy method of applying the above is to form a loop around the boiler by $\frac{1}{2}$ " rope and a slip knot. Then place one ply of covering material inside this loop until the circle is complete, then tighten the rope until all the blocks are drawn firmly against the boiler. Wire the blocks with galvanized wire, using two strands for each row of blocks. Where using Mineral Wool blocks, repeat the above for the second ply of blocks. Be sure that all joints are broken. Put on a rough coat of Asbestos Cement, and then a finishing coat, and trowel smooth. Over this paste canvas jacket.

INSTRUCTIONS FOR APPLYING ASBESTOS CEMENT

To Boilers, Domes, Heaters, Etc.

The cement is usually applied in three coats one-half inch to three-quarter inch thick, regulated according to the total thickness required. The material is mixed with water in an ordinary box to a consistency of mortar and should be allowed to stand several hours before using. For applying, use an ordinary plasterer's trowel.

Apply the first coat about $\frac{1}{2}$ inch thick to the boiler while it is warm, leaving the surface rough in order that the second coat may properly adhere. Stop back about 1 inch from all manholes, doors and other openings, and when putting on last coat, finish up the edges around all openings to a nice bevel.

After the first coat is thoroughly dry, the second coat may be applied in the same manner as the first, leaving it rough for the reception of the next coat.

For the third coat mix Portland Cement with the Asbestos Cement, proportions half and half, and after applying, smooth it down, a hard finish will result.

Note—The boiler should be kept quite hot during the application, as each coat should be thoroughly dry before proceeding with the next.

HEATING DATA AND USEFUL INFORMATION

CLEANING STEAM BOILER IN SPRING

At the close of the heating season fill the Steam Boiler with water to the safety valve and let it thus stand through the summer. Disconnect smokepipe, thoroughly clean it, and store away in a dry place. Leave Boiler doors open. Clean all the inner surfaces, and at the opening of the next season withdraw the water and refill with fresh water to the water line, starting the Boiler as before. See that the cement between the sections is in place. If it has dropped out, have the joints tightly recemented.

CLEANING A WATER-GAUGE GLASS

Without Removing It

1. Draw a cupful of hot water from the Boiler, into which pour at least a tablespoon of raw muriatic or other acid.
2. Close both water-gauge valves.
3. Open top water-gauge valve and also pet cock at bottom, and blow water out of the glass. Then immediately close the top valve and submerge the end of the pet cock in cup of hot-water solution. A vacuum is at once created in the gauge glass which causes the solution in the cup to rush in.
4. Keep the pet cock immersed and operate the top valve, slightly opening and closing, alternately expelling and drawing in the solution until all grease, oil, or other matter adhering to the inside of the glass is cut out. Then close pet cock and open both water-gauge valves.

It is necessary to have one pound pressure of steam or more on the Boiler before commencing this operation, which need not occupy more than ten minutes. The result is a clean glass without the risk of breakage and probable renewal of gaskets, which is frequently the case when removing the glass for cleaning.

HEATING DATA AND USEFUL INFORMATION

TO ASCERTAIN HORSEPOWER OF BOILERS

Standard adopted by American Society of Mechanical Engineers is 30 pounds of water evaporated into dry steam per hour from temperature of feed water 100° Fahrenheit, into steam of 70 pounds pressure.

In calculating horsepower of Tubular Boilers consider 15 square feet of heating surface equivalent to one nominal horsepower and 8 to 10 square feet of heating surface of internal fired boilers equivalent to one nominal horse power.

Each nominal horsepower of boilers requires one cubic foot of feed water per hour.

Consumption of fuel averages $7\frac{1}{2}$ pounds of coal or 15 pounds dry pine wood for every cubic foot of water evaporated.

Steam Memoranda

A cubic inch of water evaporated under ordinary atmosphere pressure is converted into one cubic foot of steam (approximately).

The specific gravity of steam (at atmospheric pressure) is .411 that of air at 34° Fahrenheit, and .0006 that of water at same temperature.

27.222 cubic feet of steam weigh one pound; 13.817 cubic feet of air weigh one pound.

Locomotives average a consumption of 3,000 gallons of water per 100 miles run.

The best designed power boilers, well set, with good draft, and skillful firing, will evaporate from 7 to 10 pounds of water per pound of first-class coal.

On one square foot of grate can be burned on an average from 10 to 12 pounds of hard coal, or 18 to 20 pounds of soft coal per hour, with natural draft. With forced draft nearly double these amounts can be burned.

A standard boiler horsepower is the evaporation of 30 pounds of water per hour from a feed water temperature of 100 degrees Fahr. into steam at 70 pounds gauge pressure.

To ascertain heating surface in tubular boilers multiply two-thirds the circumference of boiler by length of boiler in inches and add to it the area of the tubes + ($\frac{2}{3}$ tube sheets—area of tubes).

1 square foot of boiler heating surface will supply from 7 to 10 square feet of radiating surface. Each horsepower of the boiler will supply from 240 to 360 feet of 1-inch steam pipe, or 80 to 120 square feet of radiating surface.

HEATING DATA AND USEFUL INFORMATION

BLOWING OFF A STEAM BOILER

A Steam Boiler should be blown off after it is ready for operation, (and before being taken over by owners), to remove the unavoidable accumulation of oil, grease, etc., that have a tendency to cause a boiler to foam, preventing the generation of steam and causing an unsteady water line. This can only be done when the boiler is under pressure. If one blowing off does not result in a steady water line and clean gauge, the operation must be repeated a second, or, if necessary, a third and fourth time.

1. Close all radiator valves, or, if the mains are valved, close both flow and return valves tightly, and also close the cock below the diaphragm regulator on boiler.
2. With a wood fire and boiler filled to centre of water glass, get up a pressure of not less than 10 to 12 pounds by the steam gauge.
3. Open the blow-off cock, being careful that a large fire is carried to maintain a pressure until the last drop of water is blown out.
4. Draw any remaining fire and open all fire and draft doors wide.
5. Allow the boiler to cool down, which will usually take from one-half to one hour, then close the steam cock and slowly fill boiler to water line.
6. Open all valves on flow and return lines, also diaphragm cock, and also the radiator valves.
7. Rebuild fire.
8. Repeat the operation until there is a steady water line and a clean gauge glass.

HEATING DATA AND USEFUL INFORMATION

NOMINAL WEIGHT OF A LINEAL FOOT OF CAST IRON PIPE, WITHOUT FLANGES

Bore in Inches	Thickness of Metal in Inches								
	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
2	5.52	8.74	12.27	16.11	20.25	24.70	29.45	34.52	39.88
$2\frac{1}{2}$	6.75	10.58	14.73	19.18	23.95	28.99	34.36	40.04	46.02
3	7.93	12.43	17.18	22.24	27.61	32.29	39.27	45.56	52.16
$3\frac{1}{2}$	9.20	14.27	19.64	25.31	31.29	37.58	44.18	51.08	58.29
4	10.43	16.11	22.09	28.38	34.98	41.88	49.09	56.60	64.43
$4\frac{1}{2}$	11.66	17.95	24.54	31.45	38.66	46.18	54.00	62.13	70.56
5	12.89	19.79	27.00	34.52	42.34	50.47	58.91	67.65	76.70
$5\frac{1}{2}$	14.11	21.63	29.45	37.58	46.02	54.76	63.81	73.17	82.84
6	15.34	23.47	31.91	40.65	49.70	59.06	68.72	78.69	88.97
7	17.79	27.15	36.82	46.79	57.06	67.65	78.54	89.74	101.24
8	20.25	30.83	41.72	52.92	64.43	76.24	88.36	100.78	113.52
9	22.70	34.52	46.63	59.06	71.79	84.83	98.18	111.83	125.79
10	25.16	38.20	51.54	65.19	79.15	93.42	107.99	122.87	138.06
11	27.61	41.88	56.45	71.33	86.52	102.01	117.81	133.92	150.33
12	30.07	46.56	61.36	77.47	93.88	110.60	127.63	144.96	162.60
13	32.52	49.24	66.27	83.60	101.24	119.19	137.45	156.01	174.87
14	34.98	52.92	71.18	89.74	108.61	127.78	147.26	167.05	187.15
15	.....	56.60	76.09	95.87	115.97	136.37	157.08	178.10	199.42
16	.....	60.29	80.99	102.01	123.33	144.96	166.90	189.14	211.69
18	.....	67.65	90.81	114.28	138.06	162.14	186.53	211.23	236.23
20	.....	.....	100.63	126.55	152.79	179.32	206.17	233.32	260.78
22	.....	.....	110.45	138.83	167.51	196.50	225.80	255.41	285.32
24	.....	.....	120.26	151.10	182.24	213.68	245.44	277.50	309.87

NOTE—For each flanged joint add a foot in length of the pipe.

HEATING DATA AND USEFUL INFORMATION

PROPERTIES OF SATURATED STEAM AND TEMPERATURE DUE TO PRESSURE

Boiling Temp.	Absolute Press. the sq. in.	Inches Vacuum	Steam Gauge Press. lbs.	Latent Heat	Heat Liquid	Vol. 1 lb. Steam cu. ft.	Boiling Temp.	Absolute Press. the sq. in.	Inches Vacuum	Steam Gauge Press. lbs.	Latent Heat	Heat Liquid	Vol. 1 lb Steam cu. ft.
157	4.408	20.94	.....	1003.4	124.86	82.6	212	14.70	.....	.....	970.4	180.00	26.79
161	4.851	20.04	.....	1001.6	127.86	77.2	215	15.60	.....	0.90	968.4	183.00	25.35
165	5.333	19.06	.....	998.7	132.86	69.1	217	16.22	.....	1.72	967.2	185.00	24.44
169	5.855	18.00	.....	996.4	136.86	63.3	219	16.86	.....	2.16	965.9	187.10	23.57
172	6.273	17.15	.....	994.6	139.87	59.4	222	17.87	.....	3.17	963.9	190.10	22.34
176	6.867	15.94	.....	992.3	143.87	54.5	225	18.91	.....	4.21	962.0	193.10	21.17
179	7.344	14.97	.....	990.5	146.88	51.2	227	19.64	.....	4.94	960.7	195.20	20.44
182	7.85	13.94	.....	988.7	149.89	48.12	230	20.77	.....	6.07	958.7	198.20	19.39
185	8.38	12.85	.....	986.9	152.89	45.25	232	21.56	.....	6.86	957.4	200.20	18.72
187	8.76	12.09	.....	985.7	154.90	43.45	235	22.79	.....	8.09	955.4	203.2	17.78
190	9.34	10.90	.....	983.9	157.91	40.91	237	23.64	.....	8.94	954.1	205.3	17.17
192	9.74	10.09	.....	982.7	159.91	39.31	240	24.97	.....	10.27	952.1	208.3	16.32
194	10.17	9.21	.....	981.5	161.92	37.78	242	25.88	.....	11.18	950.7	210.3	15.78
197	10.83	7.87	.....	979.7	164.93	35.62	244	26.83	.....	12.13	949.4	212.4	15.26
199	11.29	6.93	.....	978.8	166.94	34.26	246	27.80	.....	13.10	948.0	214.4	14.76
201	11.76	5.97	.....	977.2	168.94	32.96	248	28.80	.....	14.10	946.7	216.4	14.28
203	12.26	4.96	.....	976.0	170.95	31.72	250	29.82	.....	15.12	945.3	218.5	13.82
205	12.77	3.92	.....	974.7	172.96	30.53	252	30.88	.....	16.18	943.9	220.5	13.37
207	13.30	2.84	.....	973.5	174.97	29.39	255	32.53	.....	17.83	941.9	223.5	12.74
209	13.85	1.73	.....	972.2	176.98	28.32	257	33.66	.....	18.96	940.5	225.6	12.34
210	14.13	1.16	.....	971.6	177.99	27.80	259	34.83	.....	20.13	939.1	227.6	11.95

HEATING DATA AND USEFUL INFORMATION**AREAS OF CIRCLES**

Diameter Inches	Area	Diameter Inches	Area	Diameter Inches	Area	Diameter Inches	Area
$\frac{1}{8}$	.012	7	38.48	19	283.53	37	1075.2
$\frac{1}{4}$	.049	$7\frac{1}{2}$	44.17	$19\frac{1}{2}$	298.64	38	1134.1
$\frac{3}{8}$	.110	8	50.26	20	314.16	39	1194.6
$\frac{1}{2}$	.196	$8\frac{1}{2}$	56.74	$20\frac{1}{2}$	330.06	40	1256.6
$\frac{3}{4}$	.441	9	63.61	21	346.36	41	1320.2
1	.785	$9\frac{1}{2}$	70.88	$21\frac{1}{2}$	363.05	42	1385.4
$1\frac{1}{8}$	.994	10	78.54	22	380.13	43	1452.2
$1\frac{1}{4}$	1.227	$10\frac{1}{2}$	86.59	$22\frac{1}{2}$	397.60	44	1520.5
$1\frac{1}{2}$	1.767	11	95.03	23	415.47	45	1590.4
$1\frac{3}{4}$	2.405	$11\frac{1}{2}$	103.87	$23\frac{1}{2}$	433.73	46	1661.9
2	3.141	12	113.10	24	452.39	47	1734.9
$2\frac{1}{4}$	3.976	$12\frac{1}{2}$	122.71	$24\frac{1}{2}$	471.43	48	1808.5
$2\frac{1}{2}$	4.908	13	132.73	25	490.8	49	1885.7
$2\frac{3}{4}$	5.939	$13\frac{1}{2}$	143.13	26	530.9	50	1963.5
3	7.06	14	153.94	27	572.5	51	2042.8
$3\frac{1}{4}$	8.29	$14\frac{1}{2}$	165.13	28	615.7	52	2123.7
$3\frac{1}{2}$	9.62	15	176.71	29	660.5	53	2206.1
$3\frac{3}{4}$	11.04	$15\frac{1}{2}$	188.69	30	706.8	54	2290.2
4	12.56	16	201.06	31	754.7	55	2375.8
$4\frac{1}{2}$	15.90	$16\frac{1}{2}$	213.82	32	804.2	56	2463.0
5	19.63	17	226.98	33	855.3	57	2551.7
$5\frac{1}{2}$	23.75	$17\frac{1}{2}$	240.52	34	907.9	58	2642.0
6	28.27	18	254.46	35	962.1	59	2733.9
$6\frac{1}{2}$	33.18	$18\frac{1}{2}$	268.80	36	1017.8	60	2827.4

HEATING DATA AND USEFUL INFORMATION

CIRCUMFERENCE OF CIRCLES

Diam.	Circumference	Diam.	Circumference	Diam.	Circumference	Diam.	Circumference	Diam.	Circumference	Diam.	Circumference
$\frac{1}{8}$	.3927	$2\frac{1}{2}$	7.8540	$9\frac{1}{2}$	29.845	18	56.549	28	87.965	45	141.372
$\frac{1}{4}$	.7854	$2\frac{3}{4}$	8.6394	10	31.416	$18\frac{1}{2}$	58.119	29	91.106	46	144.513
$\frac{3}{8}$	1.1781	3	9.4248	$10\frac{1}{2}$	32.987	19	59.690	30	94.248	47	147.655
$\frac{1}{2}$	1.5708	$3\frac{1}{4}$	10.210	11	34.558	$19\frac{1}{2}$	61.261	31	97.389	48	150.796
$\frac{5}{8}$	1.9635	$3\frac{1}{2}$	10.996	$11\frac{1}{2}$	36.128	20	62.832	32	100.531	49	153.938
$\frac{3}{4}$	2.3562	$3\frac{3}{4}$	11.781	12	37.699	$20\frac{1}{2}$	64.403	33	103.673	50	157.080
$\frac{7}{8}$	2.7489	4	12.566	$12\frac{1}{2}$	39.270	21	65.973	34	106.814	51	160.221
1	3.1416	$4\frac{1}{2}$	14.137	13	40.841	$21\frac{1}{2}$	67.544	35	109.956	52	163.363
$1\frac{1}{8}$	3.5343	5	15.708	$13\frac{1}{2}$	42.412	22	69.115	36	113.097	53	166.504
$1\frac{1}{4}$	3.9270	$5\frac{1}{2}$	17.279	14	43.982	$22\frac{1}{2}$	70.686	37	116.239	54	169.646
$1\frac{3}{8}$	4.3197	6	18.850	$14\frac{1}{2}$	45.553	23	72.257	38	119.381	55	172.788
$1\frac{1}{2}$	4.7124	$6\frac{1}{2}$	20.420	15	47.124	$23\frac{1}{2}$	73.827	39	122.522	56	175.929
$1\frac{5}{8}$	5.1051	7	21.991	$15\frac{1}{2}$	48.695	24	75.398	40	125.664	57	179.071
$1\frac{3}{4}$	5.4978	$7\frac{1}{2}$	23.562	16	50.265	$24\frac{1}{2}$	76.969	41	128.805	58	182.212
$1\frac{7}{8}$	5.8905	8	25.133	$16\frac{1}{2}$	51.836	25	78.540	42	131.947	59	185.354
2	6.2832	$8\frac{1}{2}$	26.704	17	53.407	26	81.681	43	135.088	60	188.496
$2\frac{1}{4}$	7.0686	9	28.274	$17\frac{1}{2}$	54.978	27	84.823	44	138.230		

To find the circumference of a circle when diameter is given multiply the given diameter by 3.1416.

HEATING DATA AND USEFUL INFORMATION

VELOCITY OF FLOW OF WATER

In feet per minute, through pipes of various sizes, for varying quantities of flow.

Gallons per Minute	$\frac{3}{4}$ inch	1 inch	$1\frac{1}{4}$ inch	$1\frac{1}{2}$ inch	2 inch	$2\frac{1}{2}$ inch	3 inch	4 inch
5	218	122½	78½	54½	30½	19½	13½	7½
10	436	245	157	109	61	38	27	15½
15	653	367½	235½	163½	91½	58½	40½	23
20	872	490	314	218	122	78	54	30½
25	1090	612½	392½	272½	152½	97½	67½	38½
30	.....	735	451	327	183	117	81	46
35	.....	857½	549½	381½	213½	136½	94½	53½
40	.....	980	628	436	244	156	108	61½
45	.....	1102½	706½	490½	274½	175½	121½	69
50	.....	.....	785	545	305	195	135	76½
75	.....	.....	1177½	817½	457½	292½	202½	115
100	.....	.....	.....	1090	610	380	270	153½
125	.....	.....	.....	.....	762½	487½	337½	191½
150	.....	.....	.....	.....	915	585	405	230
175	.....	.....	.....	.....	1067½	682½	472½	268½
200	.....	.....	.....	.....	1220	780	540	306½

PRESSURES AND BOILING POINTS OF WATER FOR GIVEN STATIC HEADS

Height of Column, Feet	Pressure per Square Inch, Pounds	Boiling Point at Boiler, which is at the Bottom of the Column, Degrees Fahrenheit
2	0.866	214.9
3	1.299	216.3
4	1.732	217.6
5	2.165	219.0
6	2.598	220.3
7	3.031	221.6
8	3.464	222.8
9	3.897	224.1
10	4.330	225.3
15	6.500	231.0
20	8.660	236.2
25	10.830	241.2
30	12.990	245.7
35	15.160	249.9
40	17.320	253.8
45	19.490	257.7
50	21.650	261.3

DIAMETER OF DRILLS REQUIRED FOR VARIOUS SIZES OF TAPS

Tap, inches....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Drill, inches...	$\frac{11}{16}$	$\frac{23}{32}$	$\frac{13}{16}$	$\frac{27}{32}$	$\frac{11}{8}$	$1\frac{3}{16}$	$1\frac{13}{16}$	$1\frac{33}{64}$	$2\frac{3}{16}$	$2\frac{11}{16}$	$3\frac{5}{16}$

HEATING DATA AND USEFUL INFORMATION

EQUALIZATION OF PIPE AREAS

* Diam. of Pipes, Ins.	Number of Smaller Pipes Equivalent to One Larger Pipe											
	$\frac{3}{4}$ In.	1 In.	$1\frac{1}{2}$ In.	2 In.	3 In.	4 In.	5 In.	6 In.	7 In.	8 In.	9 In.	10 In.
$\frac{1}{2}$	2.27	4.88	15.8	31.7	96.9	205	377	620	918	.....	.....	.....
$\frac{3}{4}$	1	2.05	6.9	14	42.5	90.4	166	273	405	569	779	.....
1	1	3.5	6.8	20.9	44.1	81.1	133	198	278	380	536
$1\frac{1}{2}$	1	1.3	6.1	13	23.8	39.2	58.1	81.7	112	157
2	1	3.1	6.5	11.9	19.6	29.0	40.8	55.8	78.5
$2\frac{1}{2}$	1.8	3.87	7.1	11.7	17.4	24.4	33.4	47.0
3	1	2.12	3.9	6.4	9.5	13.3	20.9	23.7
4	1	1.8	3	4.5	6.3	8.6	12.1
5	1	1.6	2.4	3.4	4.7	6.6
6	1	1.5	2.1	2.8	4.0
7	1	1.4	1.9	2.7
8	1	1.3	1.9

* Nominal diameters standard steam and gas pipes.

Example—To find number of 2-inch pipes which will deliver as much fluid as one 5-inch pipe: In column headed 5, and opposite 2 read 11.9 which is the equivalent number of 2-inch pipes.

EQUATION OF PIPES

To reduce pipes of different sizes to their equivalent in 1 inch, following factors are sufficiently accurate for ordinary purposes.

$1\frac{1}{4}$ in.	$1\frac{1}{2}$ in.	2 in.	$2\frac{1}{2}$ in.	3 in.	$3\frac{1}{2}$ in.	4 in.	$4\frac{1}{2}$ in.	5 in.	6 in.	7 in.	8 in.
x	x	x	x	x	x	x	x	x	x	x	x
1.26	1.44	1.81	2.19	2.66	3.04	3.42	3.80	4.23	5.80	6.55	

HEATING DATA AND USEFUL INFORMATION

GALVANIZED SHEET IRON

Sizes and Weights

Gauge	Size	Ounces per Sq. Ft.	Weight of Sheet in lbs.	Gauge	Size	Ounces per Sq. Ft.	Weight of Sheet in lbs.	Gauge	Size	Ounces per Sq. Ft.	Weight of Sheet in lbs.	Gauge	Size	Ounces per Sq. Ft.	Weight of Sheet in lbs.
14	24x84	52½	46	20	28x84	26½	27	23	36x84	20½	27	26	24x84	14½	12¾
14	26x84	52½	49¼	20	30x84	26½	29	23	40x84	20½	20	26	26x84	14½	13¾
14	28x84	52½	53¾	20	36x84	26½	34¾	23	24x96	20½	20½	26	28x84	14½	14¾
14	30x84	52½	57½	20	24x96	26½	26⅓	23	26x96	20½	22¼	26	30x84	14½	16
16	24x84	42½	37	20	26x96	26½	28¾	23	28x96	20½	24	26	32x84	14½	17
16	26x84	42½	40¼	20	28x96	26½	31	23	30x96	20½	25¾	26	36x84	14½	19
16	28x84	42½	43½	20	30x96	26½	33	23	32x96	20½	27½	26	24x96	14½	14¼
16	30x84	42½	46½	20	36x96	26½	42	23	36x96	20½	31	26	26x96	14½	15¾
16	24x96	42½	42⅓	22	24x84	22½	19¾	23	40x96	20½	34⅓	26	28x96	14½	17
16	26x96	42½	46	22	26x84	22½	21¼	23	44x96	20½	37¾	26	30x96	14½	18¼
16	28x96	42½	49¾	22	28x84	22½	23	24	24x84	18½	16¼	26	32x96	14½	19½
16	30x96	42½	53	22	30x84	22½	24½	24	26x84	18½	17	26	36x96	14½	21¾
18	24x84	34½	30¼	22	36x84	22½	29½	24	28x84	18½	19	28	24x84	12½	11
18	26x84	34½	32	22	40x84	22½	33	24	30x84	18½	20¼	28	26x84	12½	11¾
18	28x84	34½	35¼	22	24x96	22½	22	24	32x84	18½	22	28	28x84	12½	12¾
18	30x84	34½	37¾	22	26x96	22½	24¼	24	36x84	18½	24	28	30x84	12½	13¾
18	36x84	34½	45¼	22	28x96	22½	26⅓	24	40x84	18½	27	28	32x84	12½	14½
18	24x96	34½	34¾	22	30x96	22½	28	24	24x96	18½	18½	28	36x84	12½	16¼
18	26x96	34½	36½	22	36x96	22½	33⅔	24	26x96	18½	20	28	24x96	12½	12⅔
18	28x96	34½	40⅓	22	40x96	22½	37¾	24	28x96	18½	21¾	28	26x96	12½	13½
18	30x96	34½	42¼	23	24x84	20½	18	24	30x96	18½	23	28	28x96	12½	14½
18	36x96	34½	51¾	23	26x84	20½	19½	24	32x96	18½	24¾	28	30x96	12½	15½
19	28x84	30½	31	23	28x84	20½	21	24	36x96	18½	27¾	28	32x96	12½	16½
20	24x84	26½	23	23	30x84	20½	22½	24	40x96	18½	31	28	36x96	12½	18½
20	26x84	26½	25	23	32x84	20½	24	24	44x96	18½	34				

HEATING DATA AND USEFUL INFORMATION**SPECIFIC GRAVITY OF BODIES**

Body	Specific Gravity	Weight per cu. ft. in pounds
Water.....	1.00	62.5
Aluminum.....	2.50	156.3
Tin (cast).....	7.29	455.6
Steel.....	7.84	490.0
Cast Iron.....	7.21	450.6
Wrought Iron.....	7.68	480.0
Brass.....	8.38	523.8
Copper.....	8.79	549.4
Lead (cast).....	11.35	709.4
Mercury.....	13.60	850.0
Platinum.....	21.50	1343.8

WEIGHTS

1 cubic inch of Cast Iron... weighs..	0.260 pounds
1 cu. inch of Wrought Iron.. weighs..	0.280 pounds
1 cubic inch of Water..... weighs..	0.036 pounds
1 U. S. Gallon..... weighs..	8.330 pounds
1 Imperial Gallon..... weighs..	10.000 pounds
1 U.S. Gallon..... equals..	231.000 cu. inches
1 Imperial Gallon..... equals..	277.274 cu. inches
1 cubic foot of Water..... equals..	7.480 U.S. gals.
1 pound of Steam..... equals..	27.222 cubic feet
1 pound of Air..... equals..	13.817 cubic feet

BOILING POINTS OF VARIOUS FLUIDS

	Degrees
Water, Atmospheric Pressure.....	212
Alcohol.....	173
Sulphuric Acid.....	240
Refined Petroleum.....	316
Turpentine.....	315
Sulphur.....	570
Linseed Oil.....	597

MELTING POINTS OF DIFFERENT METALS

	Degrees
Aluminum.....	1400
Antimony.....	810
Bismuth.....	476
Brass.....	1900
Bronze.....	1692
Copper.....	1996
Glass.....	2377
Gold (pure).....	2590
Iron (cast).....	2450
Iron (wrought).....	2912
Lead.....	608
Platinum.....	3080
Silver (pure).....	1873
Steel.....	2500
Tin.....	446
Zinc.....	680

Note—Above information is quoted from standard authorities. Not guaranteed.

HEATING DATA AND USEFUL INFORMATION

TABLE OF EQUIVALENT TEMPERATURE FOR TESTING A HEATING PLANT AT DIFFERENT OUTSIDE TEMPERATURES

For the purpose of indicating the efficiency of the apparatus for any specified condition, Prof. Carpenter gives the following table, which has been generally accepted as the standard test.

For steam, the Radiator temperature in all cases is assumed to be that due to a pressure of 3 lbs. at the boiler, or about 220 degrees Fahr.

For water, the Radiator temperature is assumed in all cases to be at an average of 160 degrees Fahr.

For a plant proportioned sufficiently to maintain a temperature of 70 degrees when the outside temperature is at zero.

Temperature of Outside Air	Room Should be raised to	Temperature of Outside Air	Room should be raised to	Temperature of Outside Air	Room should be raised to
—10	64.7	30	86.5	70	110.5
0	70.0	40	93.1	80	117.1
10	75.1	50	98.7	90	123.5
20	81.0	60	104.7	100	130.3

TABLE SHOWING EXPANSION OF WROUGHT IRON PIPE

Initial Temperature	Increase in length per 100 feet when heated to									
	160°	180°	200°	212°	228°	240°	250°	259°	267°	274°
Zero. in.....	1.28	1.44	1.60	1.69	1.82	1.92	2.00	2.07	2.13	2.20
32° in.....	1.02	1.18	1.34	1.43	1.56	1.66	1.74	1.81	1.87	1.94
64° in.....	.77	.93	1.09	1.18	1.31	1.41	1.49	1.56	1.61	1.69
	Hot Water			Boiling Water	5 lbs.	10 lbs.	15 lbs.	20 lbs.	25 lbs.	30 lbs.

Wrought iron pipe expands, in inches, per 100 feet, 4-5 of the increase in temperature of steam or water it is subjected to, over the temperature at the time of installation, divided by 100.

Example—Temperature when installed, 32°, 10 lbs. pressure = 240°, difference 208°, 4-5 of which equals 1 66-100 inches expansion per 100 feet.

HEATING DATA AND USEFUL INFORMATION

MOISTURE ABSORBED BY AIR

Maximum (100 Per Cent.) Saturation

Temperature Fahrenheit	Lbs. in 1000 Cu. Ft.	Grains in One Cu. Ft.	Temperature Fahrenheit	Lbs. in 1000 Cu. Ft.	Grains in One Cu. Ft.
—20	.0313	.2191	75	1.3366	9.3562
—10	.0510	.3570	77	1.4230	9.9610
— 5	.0643	.4501	80	1.5619	10.8333
0	.0806	.5642	85	1.8194	12.7358
5	.1007	.7049	90	2.1130	14.7910
10	.1247	.8729	95	2.4463	17.1243
15	.1536	1.0752	100	2.8237	19.7559
20	.1887	1.3209	105	3.2501	22.7507
25	.2301	1.6107	110	3.64	25.5
30	.2797	1.9579	115	4.28	30.
32	.3019	2.1133	130	6.00	42.5
35	.3380	2.3660	140	8.28	58.
40	.4070	2.8490	157	12.10	85.
45	.4877	3.4139	170	16.00	112.
50	.5623	4.0761	179	19.7	138.
52	.6246	4.3722	188	23.7	166.
55	.6927	4.6489	195	27.7	194.
57	.7414	5.1898	212	37.8	265.
60	.8206	5.7442			
62	.8774	6.1418			
65	.9689	6.7823			
67	1.0344	7.0240			
70	1.1400	7.9800			
72	1.2154	8.5078			

HEATING DATA AND USEFUL INFORMATION

RULES RELATIVE TO THE CIRCLE, SQUARE, AND TRIANGLE

To Find Circumference

Multiply diameter by 3.1416, or divide diameter by 0.3183.

To Find Diameter

Multiply circumference by 0.3183, or divide circumference by 3.1416.

To Find Radius

Multiply circumference by 0.15915, or divide circumference by 6.28318.

To Find Side of an Inscribed Square

Multiply diameter by 0.7071, or multiply circumference by 0.2251, or divide circumference by 4.4428.

To Find Side of an Equal Square

Multiply diameter by 0.8862, or divide diameter by 1.1284, or multiply circumference by 0.2821, or divide circumference by 3.545.

Square

A side multiplied by 1.1442 equals diameter of its circumscribing circle.

A side multiplied by 4.443 equals circumference of its circumscribing circle.

A side multiplied by 1.128 equals diameter of an equal circle.

A side multiplied by 3.547 equals circumference of an equal circle.

Square inches multiplied by 1.273 equals circle inches of an equal circle.

To Find the Area of a Circle

Multiply circumference by one-quarter of the diameter, or multiply the square of diameter by 0.7854, or multiply the square of circumference by 0.7958, or multiply the square of $\frac{1}{2}$ diameter by 3.1416.

To Find the Surface of a Sphere or Globe

Multiply the diameter by the circumference, or multiply the square of diameter by 3.1416, or multiply four times the square of radius by 3.1416.

The Area of any Triangle equals one half the product of the base and perpendicular.

HEATING DATA AND USEFUL INFORMATION

VELOCITY OF AIR DUE TO PRESSURE

Temperature 50° Fahrenheit

Pressure in Ounces per sq. in.	Velocity in Feet, per Second	Velocity in Feet, per Minute	Pressure in Ounces per sq. in.	Velocity in Feet, per Second	Velocity in Feet, per Minute	Pressure in Ounces per sq. in.	Velocity in Feet, per Second	Velocity in Feet, per Minute	Pressure in Ounces per sq. in.	Velocity in Feet, per Second	Velocity in Feet, per Minute
$\frac{1}{8}$	30.47	1,828.4	$2\frac{1}{4}$	128.70	7,722.2	$4\frac{3}{4}$	186.03	11,161.5	12	291.30	17,478.2
$\frac{1}{4}$	43.08	2,585.0	$2\frac{3}{8}$	132.20	7,931.8	5	190.76	11,445.5	$12\frac{1}{2}$	297.01	17,820.6
$\frac{3}{8}$	52.75	3,165.1	$2\frac{1}{2}$	135.59	8,135.7	$5\frac{1}{4}$	195.37	11,722.0	13	302.59	18,155.2
$\frac{1}{2}$	60.90	3,653.8	$2\frac{5}{8}$	138.91	8,334.4	$5\frac{1}{2}$	199.86	11,991.5	$13\frac{1}{2}$	308.04	18,482.4
$\frac{5}{8}$	68.07	4,084.0	$2\frac{3}{4}$	142.14	8,528.3	$5\frac{3}{4}$	204.25	12,254.8	14	313.38	18,802.7
$\frac{3}{4}$	74.54	4,472.6	$2\frac{7}{8}$	145.29	8,717.6	6	208.53	12,511.9	$14\frac{1}{2}$	318.61	19,116.3
$\frac{7}{8}$	80.50	4,829.7	3	148.38	8,902.8	$6\frac{1}{2}$	216.82	13,009.3	15	323.73	19,423.6
1	86.03	5,161.7	$3\frac{1}{8}$	151.40	9,084.0	7	224.77	13,486.4	$15\frac{1}{2}$	328.75	19,725.0
$1\frac{1}{8}$	91.22	5,473.4	$3\frac{1}{4}$	154.36	9,261.5	$7\frac{1}{2}$	232.42	13,945.4	16	333.68	20,020.7
$1\frac{1}{4}$	96.13	5,768.0	$3\frac{3}{8}$	157.26	9,435.4	8	239.80	14,387.9	$16\frac{1}{2}$	338.51	20,310.8
$1\frac{3}{8}$	100.80	6,047.9	$3\frac{1}{2}$	160.10	9,606.1	$8\frac{1}{2}$	246.92	14,815.4	17	343.26	20,595.8
$1\frac{1}{2}$	105.25	6,315.2	$3\frac{5}{8}$	162.89	9,773.3	9	253.83	15,229.6	$17\frac{1}{2}$	347.93	20,875.8
$1\frac{5}{8}$	109.52	6,571.3	$3\frac{3}{4}$	165.63	9,938.0	$9\frac{1}{2}$	260.52	15,631.0	18	352.52	21,151.0
$1\frac{3}{4}$	113.64	6,817.6	$3\frac{7}{8}$	168.33	10,099.6	10	267.00	16,020.4	$18\frac{1}{2}$	357.03	21,421.6
$1\frac{7}{8}$	117.58	7,055.0	4	170.98	10,258.6	$10\frac{1}{2}$	273.32	16,399.3	19	361.46	21,687.8
2	121.41	7,284.4	$4\frac{1}{4}$	176.15	10,568.8	11	279.70	16,768.1	$19\frac{1}{2}$	365.83	21,949.7
$2\frac{1}{8}$	125.11	7,506.7	$4\frac{1}{2}$	181.16	10,869.5	$11\frac{1}{2}$	285.46	17,127.6	20	370.13	22,207.5

HEATING DATA AND USEFUL INFORMATION

USEFUL INFORMATION

Water Boils in open vessel, atmospheric pressure, sea level at 212°.

Water Boils in vacuum at 98°. Hence resultant vapor is 98°.

Water Expands in heating from 39° to 212°, one twenty-third or about four per cent. in bulk.

Water has greatest density or occupies least space at 39° Fahr.

A Cubic Inch of Water evaporated at atmospheric pressure (14.7 lbs.) makes, approximately, one cubic foot of steam.

Multiplying the Height of a Column of Water by .434 gives pressure in pounds.

Water in Circulation is the best known absorbent of heat, and gives out more heat in cooling through a given range of temperature than any known substance.

An Imperial Gallon of water weighs 10 pounds.

A U.S. Gallon of water weighs 8.3356 pounds at 62° Fahr., and contains 231 cubic inches.

A Cubic Foot of water weighs 62½ pounds.

A Hundred Square Feet of radiation contains approximately 15 gallons of water.

Heat Unit, known as **British Thermal Unit**, or **B. T. U.** raises temperature of one pound of water 1°.

A U. S. Gallon is 1/6th less than an Imperial gallon.

HEATING DATA AND USEFUL INFORMATION

Heat Unit. One B.T.U. will raise 1 cubic foot of air 50° or 50 cubic feet of air 1° . To be exact, 48.77 cubic feet.

Heat Unit. 966 heat units will evaporate one pound of water at 212° into steam.

Heat Unit. A pound of anthracite coal contains theoretically 14,500 heat units.

Heat Unit. A pound of anthracite coal in the actual burning emits between 8,000 and 9,000 heat units only.

Heat Units emitted per hour by a square foot of cast iron radiation, under favorable conditions: Hot Water Radiators 1.5 per degree of difference between the temperature of the radiator and surrounding air. Steam Radiators emit approximately 1.8 heat units per degree difference per hour.

Doubling the Diameter of a pipe increases its capacity four times.

A Ton of Hard Coal occupies a space equal to 37 cubic feet.

A Ton of Soft Coal occupies a space equal to 40 cubic feet.

A Ton and a Half Hard Coal to a hundred square feet water radiation, or to fifty sq. feet steam radiation is the estimated fuel consumption for the winter's firing in Eastern Canada. Western Canada requires $\frac{1}{3}$ more.

A Square Foot of "Safford" Radiation weighs approximately seven pounds.

HEATING DATA AND USEFUL INFORMATION

CHIMNEY FLUES

Probably no other single source is responsible for so many failures in heating as defective chimneys. It should always be borne in mind and emphasized with every prospective customer that no boiler has a draft. The draft of the boiler depends entirely upon the chimney flue, and the better the chimney, all other conditions being equal, the more successful the working of the entire apparatus.

The size and height of chimney absolutely limit the size of boiler that can be used. To illustrate: for general residence work the manufacturer assumes that the average chimney will have a height above the ground of from 30 to 40 feet, and in his catalogue he gives the size of smoke pipe which he recommends for a given size of boiler. Now, assuming that the required boiler has a 10 inch smoke collar, it is manifestly improbable that satisfactory results can be obtained if that boiler is connected to a flue with an interior dimension of 5"x12" or 8"x8". The house owner may be entirely correct when he affirms that "the flue always had a good draft," or that "it worked with a furnace," or such similar statements. The fact remains that it is impossible to successfully compress the products of combustion that require 78 square inches area into an area of 60 to 64 square inches.

The heating contractor should personally satisfy himself that the chimney flue meets all the conditions required, and has a clear area equal or exceeding that of the smoke pipe recommended by the manufacturer for the proposed heater, or else he should decline the job.

Do not write the manufacturer asking why a boiler does not work unless these conditions are fulfilled.

Chimney flues for heating apparatus should be ample in size and carried as nearly straight as possible from a point near the cellar floor to above the highest projection of the roof. They should be independent, having no connection with other flues or openings, and always of the same area from top to bottom. See illustrations, page 288.

HEATING DATA AND USEFUL INFORMATION

CHIMNEY FLUES

For the reason that local conditions must of necessity govern the size and height of chimney, a great deal depends upon the judgment of the heating engineer, and it would be impossible to apply the same rule in every instance. Professor William Kent gives a formula which is approved by Professor R. C. Carpenter, and from which has been compiled the following table, which we believe heating engineers will find of material assistance when considering chimney flue. This table gives the diameter of round chimneys in inches for various heights. Square chimneys with sides equal to the diameter are considered equivalent.

Height of Chimney in Feet

Steam *Square Feet Rated Boiler Capacity	Water *Square Feet Rated Boiler Capacity	30	40	50	60	80	100
250	375	7.0					
500	750	9.2	8.8	8.2	8.0		
750	1,125	10.8	10.2	9.6	9.3	8.8	8.5
1,000	1,500	12.0	11.4	10.8	10.5	10.0	9.5
1,500	2,250	14.4	13.4	12.8	12.4	11.5	11.2
2,000	3,000	16.3	15.2	14.5	14.0	13.2	12.6
3,000	4,500	18.5	18.2	17.2	16.6	15.8	15.0
4,000	6,000	22.2	20.8	19.6	19.0	17.8	17.0
5,000	7,500	24.6	23.0	21.6	21.0	19.4	18.6
6,000	9,000	26.8	25.0	23.4	22.8	21.2	20.2
7,000	10,500	28.8	27.0	25.5	24.4	23.0	21.6
8,000	12,000	30.6	28.6	26.8	26.0	24.2	23.4
9,000	13,500	32.4	30.4	28.4	27.4	25.6	24.4
10,000	15,000	34.0	32.0	30.0	28.6	27.0	25.4

*Indirect radiation should be made equivalent to direct radiation by adding 50 per cent.

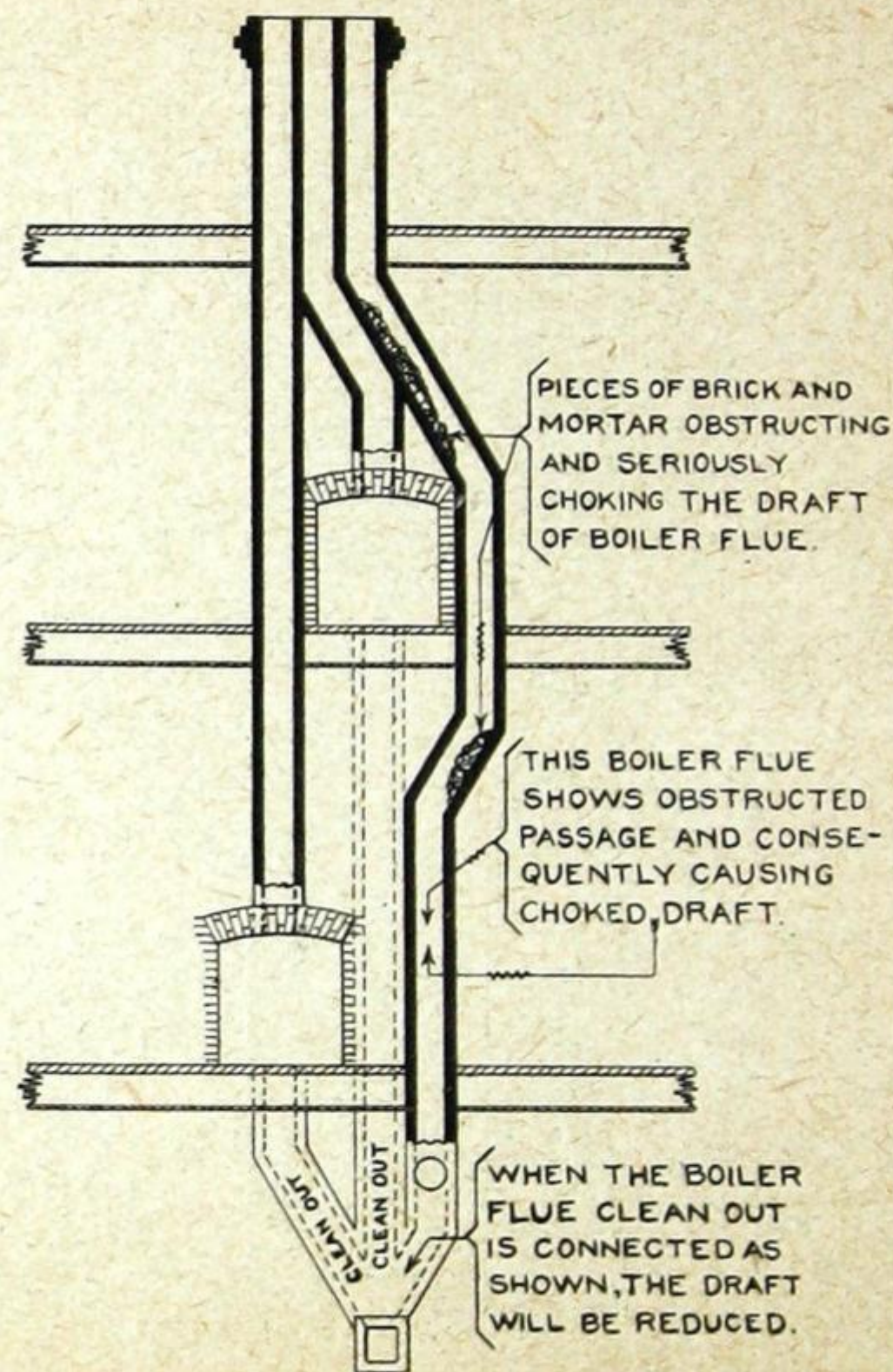
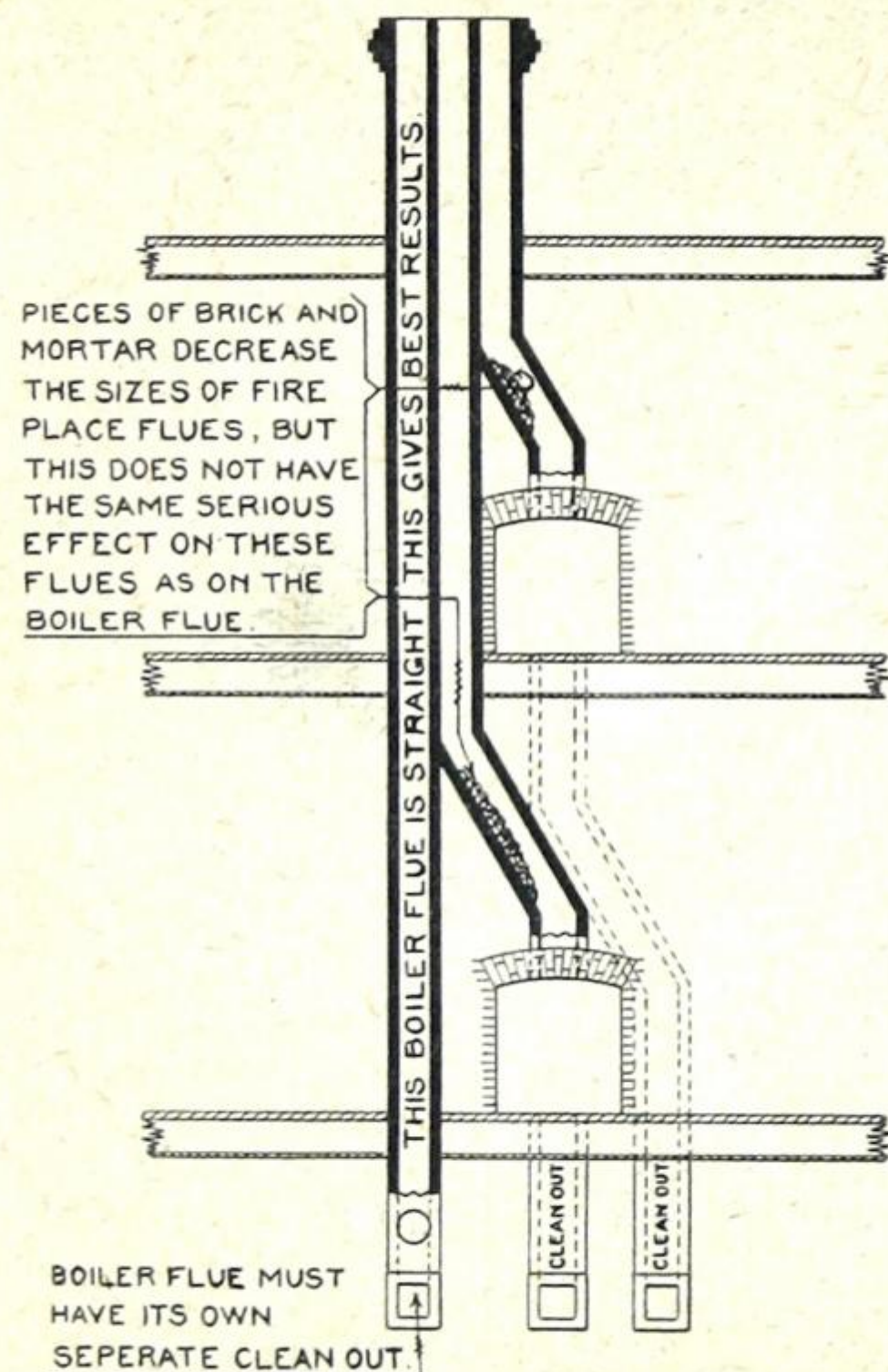
HEATING DATA AND USEFUL INFORMATION

CHIMNEY FLUES

First—See that there are no other openings into the boiler flue, either above or below the boiler smoke-pipe, special care being exercised at the base of the flue that the boiler flue does not connect with the other flues through the soot pocket.

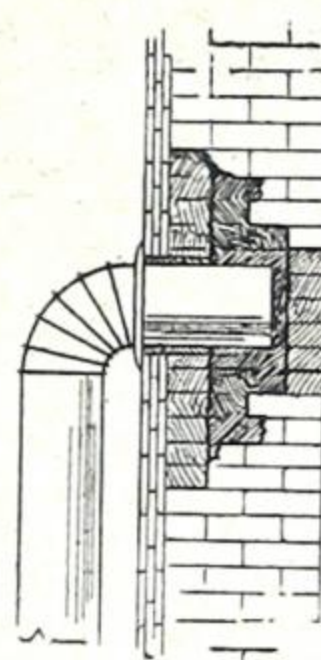
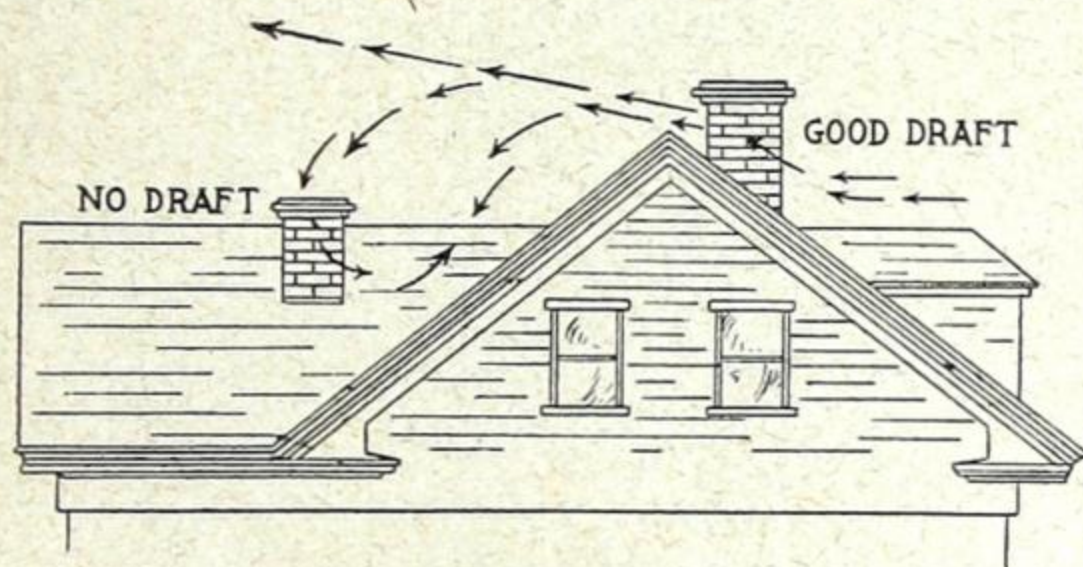
Second—See that the division walls of the chimney, if it contains more than one flue, are carried up to top of the chimney, so that each flue is independent of the others throughout its entire length.

Third—That the area of the chimney flue is maintained full size throughout its entire length, and is free from all obstructions, such as loose brick, mortar, etc., that might have become lodged in it.



HEATING DATA AND USEFUL INFORMATION

CHIMNEY FLUES

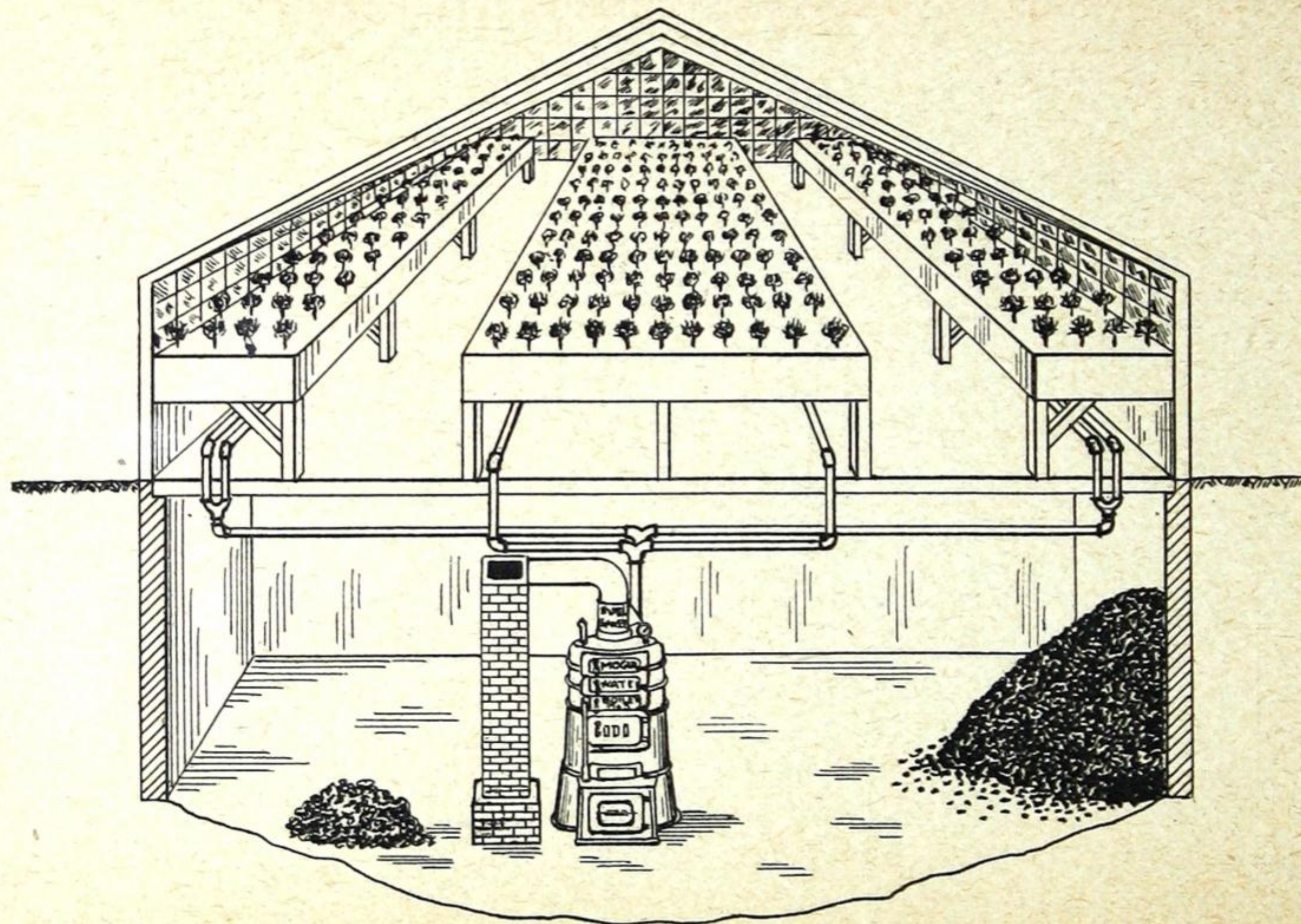


Fourth—That chimney extends above the highest point of the roof or other immediate surrounding elevation. This is quite important, and failure to observe same may be looked to as cause for poor draft. See illustration above.

Fifth—That the smoke-pipe does not project into chimney too far, and thus lessen the area of flue at this important point, where the smoke leaves pipe and enters flue. See illustration above.

HEATING DATA AND USEFUL INFORMATION

GREENHOUSE HEATING



HEATING DATA AND USEFUL INFORMATION

GREENHOUSE HEATING

While Greenhouses may be satisfactorily heated with Steam, Hot Water is generally preferred because of its ability to store large quantities of heat, and in case the fires are neglected or go out, this stored heat is given off gradually, and by preventing a sudden fall in temperature protects the plants from injury.

Table of Amounts of Radiating Surface Necessary to Heat a Given Amount of Glass Exposure to Various Temperatures in Zero Weather.

Square Ft. of Glass Exposure	STEAM					Square Ft. of Glass Exposure	HOT WATER				
	No. of Square Feet of Radiation Required at						No. of Square Feet of Radiation Required at				
	40°	45°	50°	60°	70°		40°	45°	50°	60°	70°
25	2 7-9	3 1-8	3 4-7	4 1-6	5	25	4 1-6	5	6 1-4	7 1-7	8 1-3
50	5 5-9	6 1-4	7 1-7	8 1-3	10	50	8	10	13	14	16
75	8	9	10	13	15	75	13	15	19	21	25
100	11	13	14	17	20	100	17	20	25	29	33
200	23	25	30	33	40	200	33	40	50	57	67
300	34	38	43	50	60	300	50	60	75	86	100
400	45	50	57	67	80	400	67	80	100	114	133
500	56	63	72	83	100	500	83	100	125	143	167
1000	112	125	143	167	200	1000	167	200	250	286	333
2000	223	250	286	333	400	2000	333	400	500	572	667
3000	334	375	429	500	600	3000	500	600	750	857	1000
4000	445	500	571	667	800	4000	667	800	1000	1143	1333
5000	556	625	714	833	1000	5000	833	1000	1250	1429	1667
10000	1112	1250	1429	1667	2000	10000	1667	2000	2500	2857	3333
20000	2223	2500	2857	3333	4000	20000	3333	4000	5000	5714	6667

For poorly constructed houses add 10 per cent. to the above amounts.

For 10 degrees below zero multiply feet* radiation by 1.11.

For 20 degrees below zero multiply feet* radiation by 1.23.

For 30 degrees below zero multiply feet* radiation by 1.35.

For 40 degrees below zero multiply feet* radiation by 1.48.

Do not use Asphalt or Tar Paints in a Greenhouse. They will injure the plants. Paint pipes with lampblack and boiled oil thinned with turpentine.

A most important part of a greenhouse is its chimney. This should be of brick or tile and of ample size, and should never be less than twenty-five feet high.

HEATING DATA AND USEFUL INFORMATION

HEATING WATER IN TANKS AND POOLS

Size of Heater

In specifying heaters for any given capacity be sure to see that one is provided that will burn the fuel economically. If the heater is too small, the fire will have to be forced and a large percentage of the heat will escape up the chimney.

Many mistakes are made and much disappointment occasioned by not carefully considering the actual power needed to heat water. We give herewith some information that will be useful in estimating the power required.

Horse-Power Required

One boiler horse-power is equal to the work of evaporating $34\frac{1}{2}$ pounds of water from 212 degrees—to steam at 212 degrees. As it takes 966 British thermal units to evaporate one pound of water from 212 degrees to steam, it follows the evaporation of $34\frac{1}{2}$ pounds is equal to 33,327 B. T. U.

One U.S. gallon of water weighs (at 42 degrees) 8.33 lbs., therefore it takes 833 B.T.U. to heat one gallon 100 degrees; or, it will take 83,300 B.T.U. to heat 100 gallons and 833,000 to heat 1,000 gallons from 42 degrees to 142 degrees Fahrenheit, or from any other temperature at which the water may be to a point 100 degrees higher.

As 33,327 B.T.U. is equal to one horse-power, and the work of heating 1,000 gallons equals 833,000 B.T.U., we see by dividing the one into the other that heating 1,000 gallons per hour is equal to practically twenty-five horse-power.

Fuel Needed to Heat Water

The amount of heat in anthracite coal varies from 12,000 to 14,000 B.T.U. per pound, but the average will be about 12,500 B.T.U., which is the amount we assume in these calculations.

When burning coal in Safford Water Heaters, about 70 per cent. of the heat generated can be transmitted to the water which is being circulated through the heater.

As shown in a previous paragraph it requires 833,000 B.T.U. to raise the temperature of 1000 gallons of water 100 degrees Fahrenheit.

If we transmit 70 per cent. of the value of the fuel to the water (and as 70 per cent. of 12,500 equals 8,750 B.T.U.) for every 1,000 gallons heated 100 degrees Fahrenheit, we must burn 95 pounds of coal.

HEATING DATA AND USEFUL INFORMATION

PROPORTIONING RADIATION

There are many different rules for the proportioning of radiation, but owing to the widely varying conditions pertaining to heating installations, many of them are of little value—not much better than a rule of thumb, and serve but for more or less indifferent checking.

Where large buildings especially are to be heated, the services of a thoroughly trained and competent Heating Engineer should be secured to proportion radiation.

We append herewith several rules.

Mills and Baldwin's well-known Rules for the proportioning of radiation for steam heating are better known to the old time steam-fitter, and are a more or less guide when the outside temperature is zero or above, and the sizes of rooms and the general conditions are normal.

The Glass and Wall Rule, while fairly reliable for normal conditions at zero, is useless for rooms in which the amounts of glass and exposed wall are abnormal.

We recommend the use of the Heat Transmission Rule only. It provides for a range of temperatures any degree above zero to any degree below. Because of lack of space, we start at 20 above and stop at 20 degrees below. Intelligently used, and making a slight allowance for northerly exposed rooms over southerly ones, it will be found satisfactory and reliable.

HEATING DATA AND USEFUL INFORMATION

PROPORTIONING RADIATION—STEAM HEATING

Mills' Rule

A very popular and easily remembered formula is the well known Mills' 2-20-200 Rule (Western Canada 2-10-200), in which the total amount of steam radiation required is obtained as follows:—

$$\frac{\text{Glass}}{2} + \frac{\text{Ex. wall}}{20} + \frac{\text{Cu. contents}}{200} = \text{sq. ft. of radiation.}$$

Note.—This rule does not work out well in the case of halls or rooms having less than ordinary amounts of wall and glass surface, where the opening and closing of outside doors changes the air frequently. In such cases the radiation should be increased 20% or over.

Baldwin's Rule

Another much used formula which is applicable to varied outside and inside temperatures:

$$\frac{\text{Inside temperature—outside temperature}}{\text{Steam temperature—inside temperature}} = \text{the square feet of heating surface required}$$

for each square foot of glass or its equivalent in wall surface. And 10 square feet wall surface is assumed to equal 1 square foot of glass. Then add 20% for leakage through doors or windows.

With zero outside and 70 degrees inside this rule reduces to very simple proportions, viz.:

$$\frac{70^{\circ}-0^{\circ}}{212^{\circ}-70^{\circ}} = \frac{70}{142} = \frac{1}{2} \text{ nearly.}$$

Then the total square feet of equivalent glass surface $\div 2 + 20\% = \text{sq. ft. of steam radiation.}$

A careful analysis of this rule will show that it reaches almost exactly the same result as the Mills Rule at 70°.

HEATING DATA AND USEFUL INFORMATION**PROPORTIONING RADIATION****Glass and Exposed Wall Rule**

For Figuring Radiation for Heating with Hot Water

FOR WATER**SQUARE FEET EXPOSED GLASS**

EXPOSED WALL SURFACE	SQUARE FEET EXPOSED GLASS																								
	40	80	120	160	200	240	280	320	360	400	440	480	520	560	600	640	680	720	760	800	840	880	920	960	1000
40	8	13	17	22	25	30	35	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108
80	13	17	22	25	30	35	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114
120	17	22	25	30	35	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117
160	22	25	30	35	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122
200	25	30	35	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126
240	30	35	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130
280	35	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134
320	38	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138
360	42	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142
400	47	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146
440	50	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150
480	55	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155
520	59	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162
560	64	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166
600	69	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171
640	72	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175
680	75	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180
720	80	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184
760	83	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189
800	88	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193
840	92	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197
880	97	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197	200
920	100	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197	200	205
960	105	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197	200	205	208
1000	108	114	117	122	126	130	134	138	142	146	150	155	162	166	171	175	180	184	189	193	197	200	205	208	213

DIRECTIONS.—Figure all exposed glass surface in each room. Figure all exposed wall surface in each room. (Where interior partitions are adjoining rooms in which no heat is placed, figure one-half of such partitions.) Having found these exposures look down the side until you come to the number of feet of exposed wall surface and then looking across to the number of feet of exposed glass in that column will give the number of feet of radiation required.

HEATING DATA AND USEFUL INFORMATION

PROPORTIONING RADIATION

Glass and Wall Rule

For Figuring Radiation for Heating with Direct Steam

SQUARE FEET EXPOSED GLASS

EXPOSED WALL SURFACE	SQUARE FEET EXPOSED GLASS																								
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100
40	5	8	10	13	15	18	20	23	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65
80	8	10	13	15	18	20	23	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68
120	10	13	15	18	20	23	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70
160	13	15	18	20	23	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73
200	15	18	20	23	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75
240	18	20	23	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78
280	20	23	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80
320	23	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83
360	25	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85
400	28	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88
440	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90
480	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93
520	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95
560	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98
600	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100
640	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103
680	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105
720	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108
760	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110
800	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110	113
840	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110	113	115
880	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110	113	115	118
920	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110	113	115	118	120
960	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110	113	115	118	120	123
1000	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100	103	105	108	110	113	115	118	120	123	125

DIRECTIONS.—Figure all exposed glass surface in each room. Figure all exposed wall surface in each room. (Where interior partitions are adjoining rooms in which no heat is placed, figure one-half of such partitions.) Having found these exposures look down the side until you come to the number of feet of exposed wall surface and then looking across to the number of feet of exposed glass in that column will give the number of feet of radiation required.

HEATING DATA AND USEFUL INFORMATION

PROPORTIONING RADIATION

Heat Transmission Rule

(For figuring radiation for heating by water or steam, to maintain 70 degrees inside).

	Different degrees of outside temperature.				
	20 above zero	10 above zero	zero	10 below zero	20 below zero
For $\frac{1}{2}$ air change per hour multiply the cubic contents by:—.....	.5	.6	.7	.8	.9
For 1 air change per hour multiply the cubic contents by:—.....	1.0	1.2	1.4	1.6	1.8
For $1\frac{1}{2}$ air change per hour multiply the cubic contents by:—.....	1.5	1.8	2.1	2.4	2.7
For 2 air changes per hour multiply the cubic contents by:—.....	2.0	2.4	2.8	3.2	3.6
Multiply the exposed glass by:—.....	50	65	75	85	95
Multiply the exposed wall by:—.....	17	20	25	27	30

Use the co-efficient for $\frac{1}{2}$ air change for rooms only requiring tempering.

“ “ “ 1 “ “ “ bedrooms.

“ “ “ $1\frac{1}{2}$ “ “ “ living rooms.

“ “ “ 2 “ “ “ halls, bath and exposed rooms.

Add the results thus obtained and divide by 160, and the result will be the square feet of direct Hot Water radiation required to heat the room.

Add the results thus obtained and divide by 250, and the result will be the square feet of direct Steam radiation required to heat the room.

HEATING DATA AND USEFUL INFORMATION

PROPORTIONING RADIATION

Heat Transmission Rule

Example.—Consider a living room 14 x 15 exposed on two sides and having a 10 foot ceiling. The room has 60 square feet of glass and 230 (net) square feet of exposed wall. To find the correct amount of radiator surface to maintain 70 degrees inside when the outside temperature is at zero.

Cubic contents.....	2,100x2.1	4,410
Glass, square feet.....	60x75	4,500
Wall, square feet.....	230x25	5,750
		14,660

14,660 divided by 160=91 sq. ft. of direct hot water radiation.

14,660 divided by 250=58 sq. ft. of direct steam radiation.

HEATING DATA AND USEFUL INFORMATION

VENTILATION

For school rooms, it is standard practice to supply 30 cubic feet of fresh warmed air per child per minute, or 1,800 cubic feet of air per child per hour. True it is an average child will consume only about 18 cubic feet of air per hour, but as each foot of vitiated air contaminates and renders unfit for breathing 100 cubic feet of air, it follows that the standard requirement of 1,800 cubic feet of air per child per hour is correct.

A school room having 40 pupils should therefore be provided with 72,000 cubic feet of air per hour.

The term "B.T.U." is the scientific name used for the measurement of heat. One "B.T.U." is the equivalent of 788 foot pounds of work.

In the raising of the temperature of air, it is conceded that 1.6 B.T.U. will raise 1 cubic foot of air 80 degrees.

Using the preceding data, it will thus be found that to raise 72,000 cubic feet of air 80 degrees, 115,200 B.T.U. will be required, or for a ten-roomed school, containing 400 pupils, 1,152,000 B.T.U. will be required.

It is conceded that one square foot of Safford Cast Iron Hot Blast Radiation, will give off an average of 1,500 B.T.U. per hour, working under normal school conditions, so that 765 square feet of Hot Blast Radiation will thus be required for the heating of the air required for ventilation for the said school.

It is customary to figure on the air passing through the Heater at 1,300 lineal feet per minute, or 78,000 lineal feet per hour, and therefore, in proportioning the sizes of the Heaters, it would be necessary to select Heaters with a free area space of not less than 10 square feet. In practice it will be found that to get sufficient radiation distributed in, say, four stacks, a greater free area will be provided, and slightly greater or less amount of radiation. For instance, working out the above example, we find it will require:—

4 stacks of 40" Hot Blast Radiators, having 18 sections each, in all 774 square feet of radiation with a free area of 11.16 square feet.

Or 4 stacks of 50" Hot Blast Radiators, having 14 sections each, in all 756 square feet of radiation with a free area of 10.76 square feet.

Or 4 stacks of 60" Hot Blast Radiators, having 13 sections each, in all 768 square feet of radiation with a free area of 11.05 square feet.

HEATING DATA AND USEFUL INFORMATION**INDIRECT RADIATOR HEATING****Free Area Through Registers**

For Calculating Air Passage in Indirect or Hot-Blast Heating

Register Opening	Free Area in Square Feet	Register Opening	Free Area in Square Feet	Register Opening	Free Area in Square Feet	Register Opening	Free Area in Square Feet
8 x 8	0.30	14 x 14	0.91	18 x 24	2.00	27 x 27	3.37
8 x 10	0.37	14 x 16	1.04	18 x 27	2.25	27 x 38	4.75
8 x 12	0.44	14 x 18	1.17	18 x 30	2.50	28 x 28	3.63
9 x 12	0.50	14 x 20	1.30	18 x 36	3.00	28 x 30	3.88
10 x 10	0.46	14 x 22	1.43	20 x 20	1.85	28 x 32	4.15
10 x 12	0.56	16 x 16	1.19	20 x 22	2.04	28 x 36	4.66
10 x 14	0.65	16 x 18	1.33	20 x 24	2.22	30 x 30	4.17
10 x 16	0.74	16 x 20	1.48	20 x 26	2.41	30 x 36	5.00
10 x 18	0.83	16 x 22	1.63	20 x 28	2.59	30 x 42	5.83
10 x 20	0.93	16 x 24	1.78	20 x 30	2.77	30 x 48	6.67
10 x 22	1.02	16 x 28	2.07	20 x 32	2.96	36 x 36	6.00
10 x 24	1.11	16 x 30	2.22	20 x 36	3.33	36 x 40	6.67
12 x 12	0.67	16 x 32	2.37	24 x 24	2.67	36 x 42	7.00
12 x 14	0.78	16 x 36	2.67	24 x 27	3.00	36 x 48	8.00
12 x 15	0.83	18 x 18	1.50	24 x 30	3.33	38 x 38	6.67
12 x 16	0.89	18 x 20	1.67	24 x 32	3.55	38 x 40	7.03
12 x 18	1.00	18 x 21	1.75	24 x 36	4.00	38 x 42	7.38
12 x 24	1.33						

PIPES AND AREAS FOR INDIRECT HEATING

The following table will provide quick calculations for all cases of indirect heating for residences or any moderate-sized Steam or Water-heating outfit:—

Dimensions of Pipe	Area in Square Inches	Size of Register Required	Dimensions of Pipe	Area in Square Inches	Size of Register Required
8 inches	50	8 x 12	16 inches	201	18 x 24
9 "	63	9 x 14	18 "	254	20 x 26
10 "	78	10 x 16	20 "	314	24 x 27
12 "	113	14 x 16	22 "	380	24 x 32
14 "	154	16 x 20	24 "	452	30 x 30

HEATING DATA AND USEFUL INFORMATION**VOLUME AND DENSITY OF AIR****at Various Temperatures****PROPERTIES OF AIR**

Temp. Degrees Fahr.	Volume of 1 lb. of Air at Atmos- pheric Pressure of 14.7 lbs. Cubic Feet	Density or Weight of 1 Cu. Ft. of Air at 14.7 lbs. Pressure Lbs.	Temp. Degrees Fahr.	Volume of 1 lb. of Air at Atmos- pheric Pressure of 14.7 lbs. Cubic Feet	Density or Weight of 1 Cu. Ft. of Air at 14.7 lbs. Pressure Lbs.
0	11.583	0.086331	210	16.860	0.059313
32	12.387	0.080728	212	16.910	0.059135
40	12.586	0.079439	220	17.111	0.058442
50	12.840	0.077884	240	17.612	0.056774
62	13.141	0.076097	260	18.116	0.055200
70	13.342	0.074950	280	18.621	0.053710
80	13.593	0.073565	300	19.121	0.052297
90	13.845	0.072230	320	19.624	0.050959
100	14.096	0.070942	340	20.126	0.049686
120	14.592	0.068500	360	20.630	0.048476
140	15.100	0.066221	380	21.131	0.047323
160	15.603	0.064088	400	21.634	0.046223
180	16.106	0.062090	425	22.262	0.044920
200	16.606	0.060210	450	22.890	0.043686

Temp. Degrees Fahrenheit	B.T.U. ab- sorbed by 1 Cubic Foot Dry Air per Degree Fahr.	B.T.U. ab- sorbed by 1 Cubic Foot Saturated Air per Degree Fahr.	Cubic Feet Dry Air warmed 1 Degree per B.T.U.	Cubic Feet Saturated Air warmed 1 Degree per B.T.U.
0	0.02056	0.02054	48.5	48.7
12	0.02004	0.02006	50.1	50.0
22	0.01961	0.01963	51.1	51.0
32	0.01921	0.01924	52.0	51.8
42	0.01882	0.01884	53.2	52.8
52	0.01847	0.01848	54.0	53.8
60	0.01818	0.01822	55.0	54.6
62	0.01811	0.01812	55.2	54.7
70	0.01777	0.01794	56.3	55.5
72	0.01771	0.01790	56.5	55.8
82	0.01744	0.01770	57.2	56.5
92	0.01710	0.01751	58.5	57.1
100	0.01690	0.01735	59.1	57.8
102	0.01682	0.01731	59.5	57.8
112	0.01651	0.01711	60.6	58.5
122	0.01623	0.01691	61.7	59.1
132	0.01596	0.01670	62.5	59.9
142	0.01571	0.01652	63.7	60.6
152	0.01544	0.01634	65.0	61.5
162	0.01518	0.01616	66.2	62.4
172	0.01494	0.01598	67.1	63.3
182	0.01471	0.01580	68.0	64.2
192	0.01449	.....	68.9	.....
202	0.01426	.....	69.5	.....
212	0.01406	.....	71.4	.....

HEATING DATA AND USEFUL INFORMATION

HEAT VALUES

And cost of heating by Electricity and Gas, as compared with Anthracite Coal.

Electricity.—The heating value of one Kilowatt hour is approximately 3,400 B.T.U.—therefore at 4 cents per Kilowatt hour, one cent will purchase 850 B.T.U.

At \$7.50 per ton hard coal, making available about 8,000 B.T.U. per pound, one cent will purchase 21,000 B.T.U. At this rate it would cost twenty-four and seven-tenths as much to heat with electricity as with coal.

Gas.—The heat value of one cubic foot of artificial gas for heating purposes is about 600 B.T.U. At 70c. per 1,000 cubic feet, one cent would purchase 8,571 B.T.U.

With coal at \$7.50 per ton, it will cost two and four-tenths times as much to heat with gas as with hard coal.

HEATING DATA AND USEFUL INFORMATION

HEAT VALUE AND COMPOSITION OF
VARIOUS FUELS

Name of Combustible	Composition				Calo- rific Power B. T. U.
	Carbon	Hydro- gen	Volatile Matter	Ash	
Carbon.....	1.00	.....	.....	.....	14,400
Anthracite Coal.....	0.90	0.03	0.03	0.01	13,500
Bituminous Coal.....	0.85	0.05	0.06	0.06	14,400
Lignite.....	0.70	0.05	0.20	0.05	11,700
Peat.....	0.55	0.05	0.30	0.10	9,000
Peat 0.30 water.....	0.39	0.04	0.50	0.07	7,200
Coke.....	0.85	0.05	.....	0.10	12,600
Peat—Charcoal.....	0.82	.....	.....	0.18	9,000
Dry Wood.....	0.48	0.06	0.05	0.01	7,200
Wood 0.20 water.....	0.40	0.05	0.25	0.01	5,400
Wood-Charcoal.....	0.80	.....	0.04	0.07	10,800
Hydrogen.....	.....	1.00	.....	.....	62,000
Carbonic Oxide.....	0.43	.....	0.57	.....	4,320
Illuminating gas.....	0.62	0.21	0.17	.....	18,000
Gas from blast-furnace	0.06	0.02	0.92	.....	1,620

TENSILE STRESS OF BOLTS

Diam. eter of Bolts in Inches	Area at Bottom of Thread	At 7,000 lbs. per Sq. In.	At 10,000 lbs. per Sq. In.	At 12,000 lbs. per Sq. In.	At 15,000 lbs. per Sq. In.	At 20,000 lbs. per Sq. In.
$\frac{1}{2}$	.126	882	1,250	1,512	1,875	2,500
$\frac{5}{8}$	.202	1,414	1,960	2,424	2,940	3,920
$\frac{3}{4}$	.302	2,114	3,000	3,624	4,500	6,000
$\frac{7}{8}$	.420	2,940	4,200	5,040	6,300	8,400
1	.550	3,850	5,500	6,600	8,250	11,000
$1\frac{1}{8}$	.694	4,858	6,900	8,328	10,350	13,800
$1\frac{1}{4}$	.893	6,251	7,800	10,716	11,700	15,600
$1\frac{3}{8}$	1.057	7,399	10,600	12,684	15,900	21,200
$1\frac{1}{2}$	1.295	9,065	12,800	15,540	19,200	25,600
$1\frac{5}{8}$	1.515	10,605	15,300	18,180	22,950	30,600
$1\frac{3}{4}$	1.716	12,222	17,600	20,952	26,400	35,200
$1\frac{7}{8}$	2.051	14,357	20,300	24,612	30,450	40,600
2	2.302	16,114	23,000	27,624	34,500	46,000
$2\frac{1}{4}$	3.023	21,161	31,200	36,276	46,800	62,400
$2\frac{1}{2}$	3.719	26,033	37,000	44,628	55,500	74,000

The breaking strength of good bolt iron is usually taken at 50,000 pounds per square inch, with an elongation of 15 per cent. before breaking. It should not be set under a strain of less than 25,000 pounds. The proof strain is 20,000 pounds per square inch, and beyond this amount iron should never be strained in practice.

HEATING DATA AND USEFUL INFORMATION

LIST OF SIZES OF STEAM MAINS

Radiation	One-Pipe Work	Two-Pipe Work	Radiation	One-Pipe Work	Two-Pipe Work
1 to 30 sq. ft.	1 inch	$\frac{3}{4}$ x $\frac{3}{4}$ inch	1600 to 2050 inch	$4\frac{1}{2}$ inch	4 x $3\frac{1}{2}$ inch
30 to 75 "	$1\frac{1}{4}$ "	1 x $\frac{3}{4}$ "	2050 to 2500 "	5 "	$4\frac{1}{2}$ x 4 "
75 to 150 "	$1\frac{1}{2}$ "	$1\frac{1}{4}$ x 1 "	2500 to 3600 "	6 "	5 x $4\frac{1}{2}$ "
150 to 300 "	2 "	$1\frac{1}{2}$ x $1\frac{1}{4}$ "	3600 to 5000 "	7 "	6 x 5 "
300 to 650 "	$2\frac{1}{2}$ "	2 x $1\frac{1}{2}$ "	5000 to 6500 "	8 "	7 x 6 "
650 to 900 "	3 "	$2\frac{1}{2}$ x 2 "	6500 to 8100 "	9 "	8 x 6 "
900 to 1250 "	$3\frac{1}{2}$ "	3 x $2\frac{1}{2}$ "	8100 to 10000 "	10 "	9 x 6 "
1250 to 1600 "	4 "	$3\frac{1}{2}$ x 3 "			

LIST OF SIZES OF HOT WATER MAINS

Radiation		Radiation	
50 sq. ft.	1 inch pipe	700 to 950 sq. ft.	$3\frac{1}{2}$ inch pipe
50 to 125 "	$1\frac{1}{4}$ "	950 to 1200 "	4 "
125 to 175 "	$1\frac{1}{2}$ "	1200 to 1575 "	$4\frac{1}{2}$ "
175 to 300 "	2 "	1575 to 1975 "	5 "
300 to 475 "	$2\frac{1}{2}$ "	1975 to 2375 "	$5\frac{1}{2}$ "
475 to 700 "	3 "	2375 to 3850 "	6 "

Mains		Branches	
1 inch will supply 2		$\frac{3}{4}$ inch	
$1\frac{1}{2}$ "	2	1 "	
$1\frac{1}{2}$ "	1	$1\frac{1}{4}$ "	and 1-1 inch
2 "	2	$1\frac{1}{2}$ "	
$2\frac{1}{2}$ "	2- $1\frac{1}{2}$ inch and 1- $1\frac{1}{4}$ inch, or	1-2 "	and 1- $1\frac{1}{4}$ inch
3 "	1- $2\frac{1}{2}$ inch and 1-1 inch, or	2-2 "	and 1- $1\frac{1}{4}$ inch
$3\frac{1}{2}$ "	2- $2\frac{1}{2}$ inch, or 1-3 inch and	1-2 "	or 3-2 inch
4 "	1- $3\frac{1}{2}$ inch and 1- $2\frac{1}{2}$ inch, or	2-3 "	or 4-2 inch
$4\frac{1}{2}$ "	1- $3\frac{1}{2}$ inch and 1-3 inch, or	1-4 "	and 1- $2\frac{1}{2}$ inch
5 "	1-4 inch and 1-3 inch, or	1- $4\frac{1}{2}$ "	and 1- $2\frac{1}{2}$ inch
6 "	2-4 inch and 1-3 inch, or	4-3 "	or 10-2 inch
7 "	1-6 inch and 1-4 inch, or	2-4 "	and 1-2 inch
8 "	2-6 inch and 1-5 inch, or	5-4 "	and 2-2 inch

